The Builder.

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IF every house in London were ticketted with its history, how pleasant and instructive our walks amongst them would be!

Some time ago reference was made in these columns to the exceedingly salubrious character borne by the district of the "squares," as evidenced by the uniformly low rate of mortality during the most trying and pestilential seasons. To make quite clear the precise quarter of the metropolis in question, it may, in schoolboy fashion, be described as that part of London bounded on the north by the New-road, on the east by Gray's-inn-lane, on the west by Tottenham-court-road, and on the south by Holborn and New Oxford-street. These are the extreme boundaries of that portion of the town which includes within its area a greater number of commodious dwellings around open spaces than can be met with in any other spot of similar dimensions within the scope of the Registrar General's functions. When we remember that this was until no very distant date *a* if not *the* patrician part of London, it is not surprising that the associations which cluster around it, from the memory of great and eminent men, are as abundant and interesting as its claims to be still considered one of the most convenient and sanitary divisions of the modern Babel are well founded. Within these few acres of ground there have been "births, marriages, and deaths," not a few, recorded of names which are now "household words." Dipping into Mr. Cunningham's "Handbook," Mr. Weale's "London," Mr. Timbs's "Curiosities," Mr. Knight's "London," with other authorities, we have drawn together, into one focus, part of what they have to tell about the old inhabitants of these "squares," and have further jotted down some few notes made the other day during a stroll in the locality.

Russell-square, the largest and most lordly, dates about 1804. Here, in No. 21, Romily died by his own hand; Sir Thomas Lawrence lived for a quarter of a century in No. 65; Lord Chief-Justice Tenterden died in No. 28; and Baltimore House, at the corner of Guildford-street, was long the residence of Wedderburne, Lord Chancellor Loughborough. This square has had a fair share of judicial occupants, for, in addition to those names quoted, the lamented Talfourd was a resident (at No. 67) within its bounds. Concerning the residence of Sir Thomas Lawrence, there is a note in the *Gentleman's Magazine*, by the Rev. John Mitford, which says, "We shall never forget the Cossacks, mounted on their small white horses, with their long spears grounded, standing sentinels at the door of this great painter, whilst he was taking the portrait of their general, Platoff" (1818). Russell-square is built on the site of the gardens of the ancient town mansion of the Dukes of Bedford: it is one of the largest in the metropolis. The houses are of brick, with the lower part in some cases cemented. Something of architectural character is given to a block on the west side, between Montague-place and Keppel-street, but the majority are better inside than out. The pedestal for the statue of "Francis, Duke of Bedford," set up in the enclosure here, in 1809, has groups in high relief, bulls' heads at the angles, with other agricultural symbols, and is altogether more satisfactory than many others. The statue itself looks very sooty.

The size of this square is very considerable,—no less than 665 feet from north to south, and 670 feet from east to west.

At the north-east corner of Upper Montague-street was "The Field of Forty Footsteps,"—so called from a doubtful story of a conflict there between two brothers, at the time of the Duke of Monmouth's rebellion, on account of a lady (of course), who sat by while they destroyed each other. The grass never grew, it is said, over the forty footsteps they had imprinted on the ground. The alliterative title is attached to a novel and a drama.

The site of Guildford-street, says Malcolm, was formerly a path, which led from Gray's-inn-lane by the Foundling Hospital, the gardens of Great Ormond-street, the back of Queen-square, to Baltimore House (afterwards inhabited by the Duke of Bolton and the Earl of Roslyn); and was generally bounded by stagnant waters, at least 12 feet lower than the square!

Bedford-square was the scene of the curious interview between Lord Chancellor Eldon (who resided in No. 6), and the Prince Regent, afterwards George IV. The story is thus told. The prince came alone to the Chancellor's house, and upon the servant opening the door, observed that as the Chancellor had the gout, he knew he must be at home, and therefore desired to be shown up to the room where he was. The servant said his master was too ill to be seen, and that he had positive orders to show in *no one*. The prince then asked to be shown the staircase, which he immediately ascended, and pointed first to one door then to another, asking, "Is that your master's room?" The servant answered no, until he came to the right one, upon which he opened the door, seated himself by the Chancellor's bedside, and asked him to appoint his friend Jekyll, the great wit, to the vacant office of Master in Chancery. The Chancellor refused—there could not be a more unfit appointment. It was a round man for a square hole. The prince, perceiving the humour of the Chancellor, and that he was firm in his determination not to appoint him, threw himself back in his chair, and exclaimed, "How do I pity Lady Eldon!" "Good God," said the Chancellor, "what is the matter?" "Oh, nothing," answered the prince, "except that she will never see you again, for here I remain until you promise to make Jekyll a Master in Chancery." Jekyll of course obtained the appointment. This square stands on a portion of the Bedford estate, in a wretched district, formerly called St. Giles's Ruins. The centre houses are embellished with attached porticoes of Ionic pilasters and pediments: those on the east and west sides have four pilasters, and those on the north and south have five—one directly in the centre, under the pediment. The curb-roof and garret windows are seen peeping out behind the pediment, to demonstrate its absurdity. The key-stone over the entrance doorway of some of the houses displays a very fine male head. The square was built between 1800 and 1806.

Tavistock House, in Tavistock-square, now, we believe, the residence of Mr. Charles Dickens, was formerly that of Mr. James Perry, editor of the *Morning Chronicle*, during the great days of that celebrated Whig paper.

Close to that last named, stands a house which, in the language of Sir John Herschel, "can never cease to be an object of interest to astronomers of future generations." In No. 37, Tavistock-place, lived Francis Baily, president of the Royal Astronomical Society from 1825 to 1844. The house stands isolated in a garden, so as to be free from any material tremor from passing carriages. A small observatory was constructed in the upper part. In this building the earth was weighed, and its bulk and figure calculated, the standard measure of the British nation perpetuated, and the pendulum experiments rescued from their chief source of inaccurracy.

At No. 9, in Tavistock-place, dwelt John Pinkerton, the historian: here his depraved mode of life was the cause of continual quarrels with abandoned women. Mary Anne Clarke, while mistress of the Duke of York, lived for a long time at No. 31. The next house was subsequently occupied by Galt, the novelist, and Douce, the antiquary. Mr. Britton, himself an inhabitant of this quarter, gives, in his interesting "Autobiography," now in progress, particulars of many of the occupants. Burton-street and Burton-crescent preserve the name of the builder who may be regarded as the creator of all this district, James Burton. We are tempted to quote Mr. Britton's notice of him:—

"The career of Mr. Burton was like that of many other ardent and speculating persons. In his first undertaking of bu lding Russell-square, Bedford-place, Upper Bedford-place, &c. he was eminently successful, and might have retired from the working world with a handsome fortune; but he was tempted to embark in further speculations by engaging to cover a large tract of ground belonging to the Skinners' Company: this proved a failure, and he sustained serious losses. During this time he became connected with John Nash, the sycophant architect and companion of the Prince Regent and after King. That architect, like Mr. Burton, was an active speculating man, and amongst other plans for the improvement of London, his designs for Regent-street, the Regent's-park, St. James's-park, and Buckingham-Palace, were accepted and acted upon. Mr. Burton was intimately connected with Mr. Nash in carrying into effect much of the New-street, and also the Regent's-park; in the latter of which he built a handsome villa for himself, where he resided some years. At a previous time he embarked in gunpowder works, in Kent, and built a country-seat near Tunbridge. Soon afterwards he ventured on the perilous task of building and forming the new town of St. Leonard's; to convey occupants to which he established coaches to run between that place and the metropolis. These were hazardous and losing schemes, and the very worthy but daring builder was, consequently, involved in ruin. Amongst a large family, his son *Decimus* has been eminently and deservedly successful as an architect, and has designed many handsome buildings in London and different parts of the country. Amongst these are the Colosseum, and Cornwall-terrace, in the Regent's-park, the lodges and gate-ways in Hyde-park and the Green-park."

Bloomsbury-square owes its origin to the Earl of Southampton, the father of the virtuous Lady Rachel Russell. Evelyn has this note,—"9th Feb. 1665: Dined at my Lord Treasurer's, the Earle of Southampton, in Blomesbury, where he was building a noble square or piazza, a little towne: his owne house stands too low, some noble roomes, a pretty cedar chappell, a naked garden to the north, but good aire." This site formerly constituted the manor of Lomesbury, in which, according to Hughson, the kings of England anciently had their stables until removed to the Mews, near Charing-cross. Coming into the hands of the Russell family, by marriage with the Earl of Southampton, it was called first Southampton-square, and then Bloomsbury-square. Bedford-house, which occupied the north side, and wherein Lady Rachel Russell resided until her death, has been ascribed to Inigo Jones, but it would seem erroneously. It was built a few years after his death. Thornhill's copies of Raffaelle's Cartoons were in one of the wings of this house. It was sold by auction in the year 1800, and immediately pulled down.

Pope alludes to this once fashionable quarter of the town:—

> "In Palace-yard, at nine, you'll find me there,
> At ten, for certain, sir, in Bloomsbury-square."

The Earl of Chesterfield, the editor of "De Grammont's Memoirs," died here in 1713; Richard Baxter's wife in 1681. Sir Hans Sloane, Dr. Akenside, and the elder Mr. Disraeli resided in this square. The latter compiled the "Curiosities of Literature" in No. 6, which house was built in 1766, by Isaac Ware, the editor of "Palladio," originally a chimney-sweep, and whose skin, it is said, was so engrained with soot, that he bore till his dying day the marks of his early profession. The great Lord Mansfield also lived here, and his house and library were destroyed by fire in the riots of 1780, he and Lady Mansfield narrowly escaping by a back door from the hands of the mob. This square has a statue of Charles James Fox, seated, which was put up in 1816, and may be looked at with pleasure.

Torrington-square (No. 55) is note-worthy, as the residence of the late distinguished antiquary and genealogist—Sir Harris Nicolas, the editor of Nelson's Despatches and Letters. He died at Boulogne in 1848. Peter Pindar (Dr. Wolcot) died in a house attached to Montgomery's nursery gardens, now the site of Euston-square. Regent's-square, often heard the "unknown tongues" in the large Gothic building, erected for Edward Irving, and now well known as the Scotch Church, of which Dr. James Hamilton is the minister.

Gordon-square is noticeable for its churches and schools. Ground yet remains here, on the west side, to be built on.

Brunswick-square (the house-fronts are brick walls with holes in them, as in the majority of those we have already spoken of), is blocked up on the east side by the Foundling Hospital, which forms, on the other hand, the west boundary of Mecklenburg-square. The east side of the latter is architectural, and the inclosure contains some very fine trees.

Queen-square was so called out of compliment to Queen Anne, in whose reign it was erected. Alderman Barber, the printer, who died here in 1741, was the individual to whom Butler owes a monument in Poet's Corner. Jonathan Richardson, and his son, of the same name, both died in Queen-square.

Dr. John Campbell, author of the "Lives of the Admirals," and editor of the "Biographia Britannica," had a large house at the north-west corner. On Sunday evenings it was a great resort as a *conversazione* for persons of eminence in science and literature. Boswell has this note on these assemblies. "*Johnson:* I used to go pretty often to Campbell's on a Sunday evening, till I began to consider that the shoals of Scotchmen who flocked about him might probably say, when anything of mine was well done, 'Ay, ay, he has learnt this of *Cawmell.*'"

In Dodsley's "Environs," it is said that the north side of this square was left open for the sake of the beautiful landscape formed by the hills of Highgate and Hampstead, together with the adjacent fields!

Red Lion-square was built about 1698, and so called of the "Red Lion Inn," long the largest and best frequented in Holborn. The bodies of Oliver Cromwell, Ireton, and Bradshaw were carried from Westminster-abbey to the Red Lion, in Holborn, and next day were dragged thence on sledges to Tyburn. In 1733, Lord Chief Justice Raymond lived in this square. Sharon Turner, the historian, was also an occupant. The benevolent Jonas Hanway, the traveller, lived and died (1786) in a house in Red Lion-square; the principal rooms of which he decorated with paintings and emblematical devices, "in a style," says his biographer "peculiar to himself. I found," he used to say, when speaking of these ornaments, "that my countrymen and women were not *au fait* in the art of conversation; and that instead of recurring to their cards, when the discourse began to flag, the minutes between the time of assembling and the placing of the card-tables, are spent in an irksome suspense. To relieve this vacuum in social intercourse, and prevent cards from engrossing the whole of my visitors' minds, I have presented them with objects the most attractive I could imagine,—and when that fails there are the cards." Hanway was the first man who ventured to walk the streets of London with an umbrella over his head. After carrying one nearly thirty years, he saw them come into general use.

Sir John Prestwick, in his "Republica," tells us "That Cromwell's remains were privately interred in a small paddock near Holborn, on the spot where the obelisk in Red Lion-square lately stood." Can any one fond of notes and queries say what authority Prestwick had for such a statement, or whether it is a mere blunder caused by the incident we have above mentioned? The author of "A Tour through Great Britain" says:—"This present year, 1737, an Act was passed for beautifying Red Lyon-square, which had run much to decay, and no doubt but Leicester-fields and Golden-square will soon follow these good examples." Though Red Lion-square has at this time a decayed lodgings-to-let aspect, there is a picturesqueness and a touch of sentiment about it not to be found in those we have passed through of higher grade. The variety in the houses, dilapidated and disfigured as some of them are, is more interesting than the even respectability of continuous brick walls and unbroken roofs. Here we find the Needlewomen's Institution, and the Female Aid Society; and in after times No. 31, the Working Men's College, will be pointed out as the scene of the voluntary labours of a number of men known to fame, who desired to aid in the mental development of their fellows.

ON WROUGHT-IRON WORK.*

GLASS painting and the work of the mosaicist as applied to the manufacture of pavements are not the only arts the golden epoch of the Middle Ages may appropriate to itself for grandeur of style and refinement of execution. The art of wrought-iron work yields in nothing to these. Take, for example, the remains of those beautiful metal screens, or grilles, which once enclosed the choirs, the chapels, and the shrines in the cathedrals and churches of this and other Christian lands; or, some of those equally fine and masterly productions of the skill and energy of the smith which in France may still be pointed out in the wonderfully-executed hinges to the western portals of Notre Dame, in Paris; and, again, in England, although perhaps in works of less pretensions, in the metal work to the door of the hall of Merton College, Oxford; *in that to the doorway of the chapel of St. John,* within the precincts of the cathedral of Norwich; and, indeed, in that multitude of examples which have still been preserved to us throughout the length and breadth of this land in our churches and other Mediæval buildings. In all of these, and in every specimen, I say, of the like kind, is the same power of design, the same taste and energy of execution to be found as in the other before-mentioned contemporary arts, viz. those of glass-painting and mosaic work.

I use the expression contemporary arts to these—and I do so emphatically,—because to the twelfth and thirteenth centuries belong also the finest productions of the craft of the blacksmith; to an epoch, indeed, wherein it may be said every artistic effort bore the impress of unity. The craft of the blacksmith is, in my opinion, a truly noble and manly one. How our sympathies become enlisted by the many pleasing and mysterious legends attached to it! To obtain his bride one of the chief of blacksmiths, Quintin Matsys, forsook his craft, only to become a greater painter; and Bescomette, eager of celebrity, is said to have bartered his soul to attain a deeper insight into the mysteries of forging.

The manufacture of wrought iron in connection with art workmanship is a subject perhaps of greater extent and importance than any other that can well be brought before the notice of the public at the present day. It is an art which, unfortunately, in recent times, has been almost entirely superseded by the more rapid, and perhaps inexpensive method of casting. To vindicate the claims of wrought-iron work as a branch of the fine arts, to rescue it from the false and base attempts to reproduce forms which are inherent only to it, by the process of casting, and to endeavour to quicken an appreciation of its beauty and merits into a desire to make it applicable where hitherto its illegitimate rival has alone been encouraged, are necessarily some of the principal objects to be attained by observations like the present.

I therefore propose to confine myself, on the present occasion, to metal screens or grilles; to tell you something of their use and position in churches and other buildings, of the variety and character of their design and composition, of the manner and various processes by which they were manufactured, and lastly, of the few rules which appear to me were followed in designing and executing them, with a view to helping ourselves to the manufacture of new ones.

First, then, as to the use and position of metal screens or grilles. * * *

As to the design and composition of these screens, I may remark that it is very rare to find forms of a pronounced architectural character in early works of this kind; that is to say, forms which are common in architecture, either to wood or stone: the only example in early iron-work that I am aware of,—and even that no earlier than the fourteenth century,—is in the doors to the beautiful screen published by Mr. Digby Wyatt, and belonging to the Rinucini Chapel, in the church of Santa Croce, at Florence.

The imitations of purely architectural forms in metal screens belong almost exclusively to the works of the fifteenth and sixteenth centuries, as may be seen in the grille recently restored to its place in Henry V.'s tomb, in Westminster Abbey; the screen enclosing the tomb of Edward IV. in St. George's Chapel, Windsor; and in the numerous examples remaining in Germany and Belgium. Works such as these I have no wish to see reproduced, and I purposely dismiss all comments upon them beyond the few observations necessary to complete the subject.

The most remarkable specimen of those I have mentioned as belonging to the fifteenth century, and in form and composition retaining very much the character of stone-work, is that enclosing the tomb of Edward IV.; but before entering upon a description of it, let me observe that the next great work of the kind that followed was the screen to the tomb of his son-in-law, Henry VII. in Westminster. This last is what may be also termed a purely architectural *specimen, but it is not executed in wrought* iron,—it is cast in brass,—indeed, it appears to me that the art of working in wrought iron declined in the same degree as architecture and the other arts towards the close of the fifteenth century. An attempt had before been made to execute all the complicated details of Perpendicular and Flamboyant architecture in wrought metal, till the early and simple principles of the noble art became involved in the greatest complexity; and the artist, despairing to realise his design without prodigious cost and labour, sought for a solution of his difficulty in the easier process of casting. The magnificent grille of brass surrounding the tomb of Henry VII. was, I consider, the knell of death to the ancient and honourable craft of the blacksmith.

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The inference I wish to draw from the above observations is this, viz.;—that it is not legitimate in works of wrought iron to use forms or details peculiar to stone or wood carving; that if a design, to be executed in metal, from accidental or other causes, approaches in character to any such works, then the bronzist or caster in brass must be applied to, not the blacksmith. To execute such a work in wrought iron, irre-

* From a lecture delivered at the Architectural Museum, July 2nd, 1855.

spective of the costliness and difficulty, is, in fact, a violation of the art, and an excuse to substitute cast for wrought iron.

I believe, if we want examples of what are really true specimens of the art workmanship of the blacksmith, these are only to be found in the simple forms and constructions of the twelfth and thirteenth centuries, not in the elaborated and architectural ones of the fifteenth and sixteenth.

Another example I have already alluded to as belonging to the fifteenth century, and of architectural character, is that to the tomb of Henry V. at Westminster. The filling-in is very debased, clumsy, and complex in execution, and unsatisfactory when compared with the excessive beauty of its neighbour, the beautiful grille to Queen Eleanor's tomb.

We learn from the Fœdera that one Roger Johnson, of London, was the smith employed to do the work to the grille of Henry the Fifth's tomb, and that he was empowered to impress workmen for this purpose. It appears that as late as when Neale's "Westminster" was written, there were remains of the colours which were used to throw up the little embossed gilt *fleur-de-lis*, the lions, antelopes, and swans attached to the great horizontal and vertical bars.

I shall dwell no longer upon these productions of the fifteenth century, but proceed to the works of the fourteenth, mentioning only that the beautiful screens of brass which were executed toward the end of the middle ages, will form a distinct and most interesting subject for future consideration. As examples of fourteenth century screens, I prefer directing attention chiefly to those of Italy. The most beautiful I am aware of is that from Rinucini Chapel, in the church of Santa Croce, at Florence, the doors of which I have ventured to condemn. The remaining parts, however, are of the highest order of merit, and the quatrefoil reticulation a most charming composition. That which makes these grilles of Italy so valuable as specimens is the high order of finish with which they have been executed, and the introduction of a greater degree of ornamentation than is to be found in contemporary works. One from the Cathedral at Rouen is exceedingly elaborate, and is remarkable for retaining the conventional ornaments of the twelfth and thirteenth centuries.

There is also a very good example of a simple fourteenth century grille, from a tomb in Salisbury Cathedral. It consists merely of a number of upright and horizontal bars, halved and rivetted together, and forming square panels, filled in with pointed pieces of iron, like a kind of quatrefoil.

The grilles at the Cathedral of St. Quentin, France, at Sienna, and Lincoln Cathedral, are all of corresponding date, viz. the thirteenth century. Of these examples that from Sienna is immeasurably the finest, and serves to vindicate the very high character pointed art assumed in Italy. The examples from St. Quentin and Lincoln are excellent types of the manufacture of the grilles of France and England. In both countries, although the examples remaining are far more numerous in the former than in our own, a simpler kind of article appears to have been manufactured than in Italy. Let us take the example from Lincoln. This screen is one of a pair which separate the smaller transepts from the choir. In all probability screens of exactly the same design enclosed the sanctuary, and divided it from the part now called the Angels' Choir, but which formerly was used for the Lady Chapel. The kind of reticulation in this screen, and the manner of its application, is very simple and deserves attention. The scrolls of which it is composed are of the ordinary conventional type of ornament used in stone, arabesque painting, and the other applications of wrought-iron work of the twelfth and thirteenth centuries. They appear to have been formed out of bars of wrought iron, one-eighth and one-sixth of an inch thick, by five-eighths of an inch in width.

There is no more art and labour required in the formation of them than what an ordinary village blacksmith could accomplish at the present day. He would require little more than the service of the beak of his anvil, a pair of tongues, and a hammer or two of different sizes; and observe, the curves are not mathematically true, neither were they ever so; nor is it very desirable in wrought-iron work that they should be.

The screen from St. Quentin possesses greater variety in its design and manner of execution. This, too, forms part of the enclosure of the choir of the cathedral. It has the same kind of framing as the one at Lincoln, and there is also much similarity in the pattern and manner of filling in, that is, to the extent of the upper compartment only of that at St. Quentin. The second compartment is filled in with a reticulation of quatrefoils, and the third and lower one formed of panels of solid sheet metal, fastened to rebates forged in the bars of the skeleton framing. All signs in either of the above-mentioned screens of ever having had a *chevaux de frise* are quite gone; still it is not improbable that a strong bar either of wood or iron once ran along the top of them, and to which they were attached.

The framing of the grille at Sienna appears to be the same as those we have already considered; but the Italians were not content with the bare appearance of the skeleton framing, so they sought to enrich it with a wedge-shape moulding, which was rivetted to the framing beneath it; the reticulation of quatrefoils having been previously fixed by a thin strip of metal passed through slits cut in the bars of the framing, and clipping round the quatrefoils. This example was further enriched by the beautiful kind of frieze formed of a foliage pattern. This pattern was first drawn on sheet metal, perhaps about $\frac{1}{16}$ of an inch thick, cut out with a chisel and hammer, and the leaves *repoussèed*, that is, beaten into undulations. A flat horizontal bar surmounts this screen, and carries the *chevaux-de-frise* before alluded to.

The construction of these screens is exceedingly simple, and ought not to be very expensive. A few flat iron bars, halved and rivetted together, so as to form a number of panels, is all that is necessary to give them the requisite strength and stability. The reticulations, or fillings-in of the panels, added really nothing to the strength of this framing: they served merely as a protection or guard, in the same way as a succession of upright bars does to a modern iron railing. Still these reticulations admitted of great beauty and variety in their designs.

The grille before mentioned at Lincoln consists merely of a skeleton frame of wrought iron, composed of upright bars, $2\frac{1}{2}$ inches wide by $\frac{3}{4}$ inch thick. These are about 18 inches apart, and halved and rivetted on to a bottom and top rail, flat, and of corresponding thickness to the uprights, the whole forming a succession of panels.

Of the reticulations, those of the scroll pattern are the most numerous. The curves of these scrolls, as I have before mentioned, are not true: a certain angularity may be observed in them, which implies that iron is the material used. The bars out of which they were formed of course varied in size in each specimen: in thickness these bars are from an eighth to a quarter of an inch; in width, from half an inch and upwards. If a bar of the smaller dimensions was used, and a scroll of merely a continuous form required, then, very little tempering of the metal was necessary, and probably the beak of the anvil served alone to form the scroll; but, if it was too complicated in its volute to admit of being so worked, then perhaps a bolster or mould was fixed on the top of the anvil, and the end of the bar which was to form the eye of the scroll attached to the corresponding part of the mould: the iron bar, after being tempered, was beaten round the mould, and so the more complicated kind of scrolls were prepared. If, again, the reticulation was so complicated that several furrings out were required to form the pattern, as in the grille at Rouen, then a greater degree of tempering was necessary, and, what are termed the furrings out effected by beating out the bar: the file was applied in such cases to finish off the parts so beaten out.

Ornaments, such as leaves and rosettes, were produced by the means of a stamp, also used while the beaten out parts of the bar were in a highly-tempered state.

The distinction between the simpler and more ornamental kinds of scroll reticulation appears to be that the former can be worked almost without the forge and at the vice or bench; the latter and more ornate only and exclusively at the forge, on account of the many temperings the iron must undergo to produce the furrings out, and the stamping of the rosettes and other ornaments.

To form a reticulation of quatrefoils, the iron bar is again used, each of the four circles beaten into shape on a mould, and then welded together at the points.

Mere surface quatrefoils were cut out of thin sheet metal, as were also other ornaments of a similar nature; and to fix these to the iron framing, a tenon was left on part of them: a hole was then punched into the sides of the iron framing, prized up by a tool called a mandril, the tenon of the filling-in ornament then inserted, and the whole well hammered together, after being subjected to a moderate heat.

The manner of fixing scrolls, quatrefoils, and other ornaments, worked out of iron bars, to the skeleton framing, appears to be chiefly by drilling a long-shaped hole into parts of the bars of which the framing is composed, and passing a thin strip of metal through it, which, clipping round the scroll or other ornament, was twisted by a pair of pliers, and cut off short. To attach one scroll or quatrefoil to another, the same method was adopted. Sometimes these ornaments were rivetted to the skeleton framing, and to one another, as at St. Quentin.

Mouldings, when used, were often stamped out: frequently, however, they were drawn out: to effect this, a tool was made a few inches in length, and one end of it formed in shape to the reverse of the moulding: this tool was then used on a bar of iron, well tempered, and placed on the anvil, and by the application of a hammer, drawn along it until the required form was produced. In modern works these mouldings would be rolled out, as being a much easier process than drawing.

In pointing out the peculiarities in the design and construction of these metal screens of the thirteenth century workmanship, I wish it to be understood that I do not advocate a blind imitation of them in new works of the like character; but I do hold and insist that there is an obligation upon every one studying the works of a past age, that they strive to acquire a right knowledge of the motives, or rather the intention for which such works were composed, and the precise character which was given to the art itself, in reference more particularly to the material in which we find it embodied.

The age which produced works such as those I have here described was unlike our own. No effort was then made to disguise or to deceive; hence every peculiarity they possess is certain of a satisfactory solution, if only a patient investigation be made into it. It was necessary to make a screen, such as, for instance, at St. Quentin; wrought iron was to be the material used; it was to be of a certain construction, to answer to a certain purpose, and it was done; that is to say, it was not only made of wrought iron, but it was made to look like wrought iron,—unmistakeably so, and not one morsel more labour incurred than the nature of the material and the strength of the construction warranted. It is a lamentable fact, at the present day, that we cannot get common things executed in common materials and at common prices. That which any village blacksmith would have produced five hundred years ago, without effort, and comparatively without expense, can now, in this nineteenth century of ours, for the most part only be procured in some expensive emporium for such articles. Again, we want a tile pavement, one of the simplest things I believe ever executed. Well, in our new work we get no really tile pavement: one made after the same fashion as our ordinary paving bricks are made in any common tile or brick yard, but we are forced to go to the potteries for the article, and then what do we get? Certainly no tile pavement, only an imitation of one in porcelain, which, when laid down, is more like crockery-ware than terra-cotta, and at an enormous cost.

This is another example of the impossibility of getting common things executed in common

materials, and at common prices. Then, again, we want a wall decoration, say a picture. Well, we are forced either to have an elaborate work, executed after the most approved Munich frescoes, or no picture at all. The use of ordinary tempera painting is not recognized with us: in fact, it is considered too cheap a medium for an artist to realise his ideas in.

In this country, it is only the intrinsic value of an article that is cared for, and until the skill and ability of the artist rates higher in value than the material does in which he works, he will be forced either to use costly materials to embody his ideas, or to starve.

HENRY CLUTTON.

FUNGOIDAL AND EXCRETAL MATTERS AS EPIDEMICAL CAUSES.

In the *Edinburgh New Philosophical Journal*, for July current,* there is an interesting article by Professor Daubeny, of Oxford, "On the Influence of the lower vegetable Organisms in the Production of epidemic Diseases." It is Dr. Daubeny's opinion that such epidemics as the virulent cholera may owe their origin to microscopic fungi. This hypothesis the writer does not claim as a new one: indeed, it has been occasionally broached by different writers ever since the first visitation of the epidemic or Asiatic cholera to this country; but Dr. Daubeny has further matured the idea, and placed it on a basis which will enable it to hold its place beside other hypotheses, till the true theory of such epidemics be elicited; and we should not be in the least surprised to find that the true theory, so elicited, will turn out to comprise more than one of the hypotheses more or less separately advocated by different minds. Dr. Daubeny has himself, for instance, connected the fungoidal hypothesis, in a very feasible way, with that on which epidemics, such as cholera, have been, more or less, directly and exclusively ascribed to the noxious influence of animal refuse, where concentrated, as in towns; and that both cholera and typhus *are* closely connected with this latter as a cause, can scarcely be now termed a hypothesis; for the reality of such a connection has, in fact, been well ascertained; but still it remains a question how this connection is carried out, and how such refuse really and specially operates to the production of the epidemic; and it may be ultimately found, that the fungoid hypothesis is not only perfectly consistent with the ascertainment of this fact, but necessary to explain the *modus operandi* of such noxious matters as those, too generally, still so closely associated with the aggregates of human dwellings.

All fungi contain azote, or nitrogen: hence their proper pabulum is animal matter in a decomposing state; and hence, although the spores of indigenous fungi must be floating about perpetually in the atmosphere of the places where they abound, they can only fasten themselves on spots where decomposing azotized matter exists, and can be prevented from getting a footing wherever the latter is carefully removed. Moreover, there may be seasons during which, as Liebig suggests, the scavenging "ozone," or electrified and active state of the oxygen of the atmosphere, is deficient, so that the usual palliation or moderation of the evils arising from so malignant a conjunction of causes as that of the fungous *spore* with its fitting *nidus*, may be awanting, and the festering, superabounding *soil*, so suitable to these vegetable *seeds* of evil, be left undiminished, or but slowly to waste, thus affording the requisite conditions for the most luxuriant propagation of the epidemical fungus.† In this way the ozone theory and the electrical theory or hypothesis, which we have more than once brought under notice, may also take their proper and necessary places, side by side with the fungoid and the excretal hypotheses, in enabling us to arrive at a complete and satisfactory solution of the mystery of the deadly epidemics. Although Dr. Daubeny may be right, therefore, in his association of the two latter for this desirable purpose, he may be equally wrong in rejecting, as he does, the close and co-ordinate association of the two former,—or, at least, of the electrical,—with the others towards the same end.

In connection with this rather too interesting subject, we may here remark that Dr. E. H. Greenhow has had reprinted from the Transactions of the Epidemiological Society of London, published in the "Journal of Public Health" for June last, a paper read by him before that society, on "Cholera in Tynemouth, in 1831-2, 1848-9, and 1853." The case of Tynemouth appears to be an instructive one. Towards the close of his paper, the author says: "Judging from the facts detailed in the former portion of this paper, regarding the earlier visitations, it may with considerable probability be inferred that the removal of so many sources of atmospheric impurity, just before the anticipated outbreak, had removed some local conditions favourable, perhaps necessary, to the development of the pestilence in its more malignant form." This one can readily understand, if Dr. Daubeny be right; for the "sources of atmospheric impurity" referred to were doubtless the azotized nidus in which the epidemical fungus would have multiplied,—the stinking nest in which the pestilence would have been hatched,—as in ordinary seasons it would have been the source of that "atmospheric impurity" to which, perhaps, directly, the ordinary forms of endemic disease, such as typhus, scarletina, &c. ought to be attributed, rather than (in their case) indirectly to the propagation of the virulent or epidemical fungi in the rotting matters which yielded the mere "atmospheric impurity" productive of these more ordinary forms of disease.

The moral, as we may term it, of what has been said, then, is, as Dr. Daubeny expresses it, that,—

"Whilst on the one hand epidemic cholera never breaks out except in spots where human beings are closely congregated, its propagation on the other hand may in general be rendered more or less difficult, in proportion to the care bestowed in removing every kind of decomposing organic matter—all bodies capable of absorbing animal effluvia, such as rags, clothes, dust, &c.—everything, in short, of an azotized nature which can serve as a *nidus* of infection; just as moulds and other fungous growths may be prevented from springing up, by removing all those conditions which experience has shown to be favourable to their growth."

This wholesome and reassuring inference we may even reiterate in the words of one of the final conclusions of Dr. Greenhow's paper, drawn from facts, as Dr. Daubeny's is from reasoning, that,—

"When cholera is impending, it may either be averted, or at least the visitation be much mitigated, by active measures of a precautionary character; and that probably sound sanitary arrangements, which provided for the complete and rapid removal of all the excretæ and other exuviæ of towns, would so improve their condition as to remove the local sources of atmospheric impurity which appear to favour the development of cholera in a pestilential form."

The authorities in every parish throughout the United Kingdom ought at this moment to be at work.

CONSTRUCTION AS APPLIED TO CIVIC STRUCTURES.

OUR readers are aware that Professor Hosking's two Treatises of 1829-31, "Architecture" and "Building," respectively, of the seventh edition of the Encyclopædia Britannica, have been revised and amended for the eighth edition, so far as was consistent with the fact of the matter being in stereotype plates; and that there is in the eighth edition a supplement to "Architecture" (wholly new) which has been appended. Part of this supplement will be found in our pages. The same able writer has since contributed two new articles, "Construction" and "Drainage," to be further supplementary to "Architecture" and "Building," as one cognate subject; and as the work may not come into the hands of all our readers, we reprint the section of the article on "Construction" as applied to civic structures:"—

"The ignitibility of timber, and the rapidity with which it burns when placed in circumstances so favourable to that effect as by its disposition in an erected building, have led to its prohibition for the purposes of the main inclosures of houses, and buildings generally, in London, and in some of our larger provincial towns. It is possible, however, so to protect timber employed in the inclosures, and for the internal partitions and floors of buildings, as to render mere dwelling-houses practically fireproof. Whilst, however, the liability of timber to take fire and to burn may in a great measure be counteracted, and notwithstanding that this material combines the advantage of economy with security, stone and brick are undoubtedly better adapted for the main structure of a building. Brick or stone, or brick and stone together, with mortar as a setting material, ought to be employed, but in such manner only as to be freed from dependence upon other and less trustworthy materials. The most perfect erections as buildings are those in the composition of which this principle has been understood and fairly practised. If adventitious aid be given to brick or stone walls by foreign materials, the materials ought to be at the least harmless. Iron in bulk is not a proper substance to incorporate with walls, because of its great expansibility by heat; but iron used in thin laminæ, as hoop-iron laid in walls in the bed-joints of the brick or stone, cannot be productive of any bad consequences, whilst it is most beneficial in that form as a tie to the structure.

Bricks come ready shaped to the hands of the workman, in a form the best adapted for the arrangement in the construction of a wall, which, under the designation of bond, gives it such a degree of consistency that a weight placed upon the top is carried by the wall in every part throughout its whole thickness, and throughout a greater or less proportion of the length, according to the height of the wall.*

Stone, on the other hand, comes to the workman without regular form; and with skill on his part to dispose and arrange the materials, good erections may be produced of rubble; for although the thickness of which walls may be built of rubble with safety will depend in a great degree upon the quality of the mortar, much depends also on the skill of the workman in bedding and bonding the stones. Under any circumstances, however, a wall so composed cannot, safely, be charged with heavy weights, nor be exposed to the vibrating action of floors, until the mortar shall have indurated to some extent; whereas a wall of brickwork is secure by the horizontal bedding of the bricks, and by the effect of the transverse bond which the alternation of the header and stretcher almost necessarily produces. Stone, again, may be dressed to any shape, and so as to mould it to every variety of construction with the smallest possible quantity of mortar or cement. From blocks with rough hammer-dressed parallel beds,

* Longman and Co. London, publishers,

† It so happens that while we write, a little volume on "The Philosophy of Reproduction," by Dr. R. J. Mann (Longman and Co. publishers), lies at hand, so as to suggest a reference to it thus briefly, as a good exponent of the wonderful multiplicity with which such elementary organisms (if we may so call them) as these spores do propagate their species. So far as we can see, this little treatise does not specially allude to the subject under notice; but its general bearing on it is well and popularly treated, and as a whole, especially in what relates to animal reproduction, it is well worthy of a perusal by all who desire to dive a little into the mysteries of creation. The text is pretty fully illustrated by instructive woodcuts.

* Bond in brickwork is most conveniently and most effectively formed and maintained by disposing the bricks in their courses either endwise and lengthwise (technically header and stretcher), alternately brick and brick, or course and course; that is to say, that the bricks in every course should be laid alternate header and stretcher, or that the courses should consist of all headers and all stretchers alternately. The former arrangement—alternate header and stretcher in the same and in every course—is known in this country as Flemish bond; and the latter—alternate courses of header and stretcher—is distinguished by the term English bond. Neat work in face can be produced more easily with Flemish bond, but English bond has the reputation of being the best bond structurally. But why these two arrangements should be distinguished by the names they bear is unknown; at least, it is unknown to the present writer, who supposed, in common with most other people with whom he had conversed upon the subject, that alternate header and stretcher in the same course was the practice in Flanders, and generally in the neighbouring countries on the Continent, whilst the term English bond seemed to imply that the arrangement which bears that designation is peculiar to England. A visit made a few years ago to the countries where Flemish bond ought most to abound, if the name be properly applied, enabled the writer to observe what had never, to his knowledge, been remarked by any person who had published his remarks, and what was quite unknown to every one to whom he has stated, since his return, what he had observed. At Rotterdam and at the Hague, at Antwerp, at Brussels, and at Liége, at Cologne, at Mayence, and at Frankfort, and again throughout the north-eastern parts of France, brick walls are built according to the arrangement distinguished in England as English bond; and Flemish bond is unknown, at least no single example of it fell under the writer's observation in any of the towns and countries indicated, although his attention was called to the subject by the quay-walls at Rotterdam before he set foot on shore.

up to the most complete and perfectly wrought parallelopipeds adapted to any arrangement of bond that may be best adapted to the structure, and with combinations of rudely formed and perfectly formed pieces of stone, walls may be built of stone of greater strength than the best bricks can be made to yield, while stone walls are liable to be inferior in every respect to brick-built walls of ordinary quality.

Some combinations of the two kinds of materials have the effect, however, of making a better wall than could be produced by the main constituent in the form employed alone. A stone-rubble, or pebble-built wall, is greatly improved by one or two bonding courses of brickwork at short intervals; and a brick wall is improved and adapted for a higher purpose by thorough courses, at intervals, of good stone, wrought to bed and joint truly; whilst on the other hand, a wall substantially of stone-rubble or pebble, and faced with brickwork, is essentially an unsound wall; as in like manner a brick wall faced with wrought stone is liable to be weaker than the brickwork would have been without the stone.

With regard to the thicknesses of the walls of buildings, it is generally considered that these should be governed by the height of the structure; but they ought not to be determined by that condition alone. Chimney-breasts, or other buttress-like projections, built up with a wall, and extending to more than the thickness of the wall, make it in fact stronger in its transverse section, and justify less general thickness in the body of the wall, whilst window and other openings in a wall leave piers which ought to be of greater thickness than the mere height would require. But all returns, indeed, whether as chimney-breasts or as cross walls, built and bonded with a wall, tend to render unnecessary the full thickness which the height might require; whilst, as just intimated, the omission of portions of a wall for door and window openings should be compensated for by additional substance to the parts which remain.

Walls subjected to undue action, such as that arising from slight joists tailed into them, or that occasioned by inclined timbers, as under galleries in churches, chapels, and theatres, require to be of greater thickness than they otherwise would; whilst it is quite wonderful to what great heights brick walls may be built with safety, if they are well built, and exposed to no other action than direct vertical weight. When, indeed, such walls stand upon a sufficient foundation, direct vertical weight without motion is a means of security to the walls so long as the weight is reasonably within the power of resistence of the materials to crushing pressure. The object to be looked at, therefore—the walls being honestly built—is, as hereinbefore remarked, to make the weight to be imposed upon any wall act upon its solids vertically and steadily.

Floors upon girders, or framed to strong trimmers—the girders or the trimmer-joists running into and bearing upon the piers or solids of the walls—are far preferable to what are termed single floors, of which each joist runs into the wall. Girders, as the basis of floors, render plates in the walls wholly unnecessary, by depositing the weight in the right places, without requiring plates to carry it on from the weaker to the stronger places; and being of necessity stout and rigid, they form a fair tie and strut to the walls into which their bearing ends are tailed.

Whether girders or trimmer joists be employed for placing the weight of floors upon the walls of a building in the safest manner, the bearing timbers ought to be placed upon pieces of stone as templates built into the walls, and be made to take a cog-hold of the templates, so as to enable them to tie and stay the walls by means of the cogs.*

It is by means of the girder bearing upon the solids of the walls, though with bad carpentry, that the French are able to carry up their soft stone rubble walls to heights that would certainly be unsafe if the walls were seamed with wooden plates, and shaken by floors of single joists;* and it is by means of the solidity given to the floors by the girders, and the solid bearings which the girders obtain, that the floors are able to carry the dead weight of matter which renders them practically fire-proof, as hereinafter described, in addition to the moving weights to which the floors of buildings are necessarily exposed in use.

We can and do frame floors most effectively by carpentry alone; whereas the French do the work so badly, that no important bearing is, or indeed may be, trusted by them to the framed joint—dog-nailed stirrup straps of iron being always brought in aid. But the common practice with us is to use single or unframed floors, which carry the weight and the vibration to which floors are exposed into the walls, over voids as well as over solids; while the French frame their floors to or upon girders, by means of which the floors are brought to bear upon the solids of the walls. The walls are thus not only less exposed to vibratory action, but are both tied together and strutted apart with better effect by the stout girders stiffened by joists, than by joists which themselves require some foreign aid to stiffen them. Moreover, single floors of joists, unless trimmed at frequent intervals, when, indeed, they may be termed half-framed, are supposed to require plates of timber laid along the inside faces of outer walls and upon internal walls. This defect is avoided by our neighbours, who exclude all timber, except the bearing ends of girders, from their walls, and use framed floors.

When the walls of a building have reached their full height, the wall-plate comes into use legitimately—to cope the walls, in fact, and to form a curb as a base upon which to place the roof, which should deposit its weight, nevertheless, by means of its tie-beams upon the plates over the solids of the walls below, and which should, moreover, oversail, so as to cover and effectually shelter from the weather the inclosing walls also.

In setting forth the structural advantages derivable from the use of girders as the bases of floors, it may be necessary to repeat the warning already intimated against the use of girders of a material of uncertain strength and of treacherous character when exposed to transverse strain.

Cast iron is of uncertain strength, mainly because of the imperfections which the most skilful founders, with the best materials and every appliance at command, cannot always avoid, and which are most liable to occur in the production of complex forms in long lengths; whilst careless founding and rapid cooling are contingencies connected with the production of cast-iron girders—which are necessarily long and complex castings. Cast iron is treacherous, inasmuch as it is brittle, and liable to be startled into fracture by impact trifling when compared with what it may have borne safely as a dead-weight.

Proving long metal castings by straining them upon their transverse section does but aggravate imperfections, and leave the casting weaker; whilst no dead-weight proof is proof as against blows or other action inducing vibration. It is only under circumstances which do not admit of concussive action upon the beam, or which prevent it from vibrating under any shock that may reach it, that cast iron can be safely used in beams of long lengths to carry heavy weights, without some appliance to mitigate, at least, the imperfections which this substance exhibits.

The application of wrought-iron tension bars as soles to beams and girders of cast iron would prevent the most serious consequences from attending the failure of the casting, if the beam were also prevented, by binders, or by other sufficient means, from turning round when the blow produces an oblique fracture.

The foundation of a building of ordinary weight is, for the most part, sufficiently provided for by applying what are technically termed footings to the walls. The reason for the footing is, that the wall obtains thereby a bearing upon a breadth of ground so much greater than its own width or thickness above the footing, as to compensate for the difference between the power of resisting pressure of the wall and of the ground or ultimate foundation upon which the wall is to rest. It will be clear from this, that if a building is to be erected upon a rock as hard as the main constituent of the walls, no expanded footings will be necessary: if upon chalk—upon strong or upon weak gravel—upon sand—or upon clay—the footing must be expanded with reference to the power of resistance of the stratum to be used as a foundation; whilst in or upon made-ground, or other loose and badly combined or imperfectly resisting soil, a solid platform bearing evenly over the ground, and wide enough not to sink into it, becomes necessary under the constructed footing. For this purpose the easiest, the most familiar, and, for most purposes, the most effectual and durable, is a layer of concrete, which may be formed so as to cover a surface large enough to obtain from the most yielding soil the amount of resistance to pressure required to support the weight of the intended building. It will be evident that upon a concrete foundation a footing or expanded base may or may not be required to a wall, according to the hardness of the concrete and the kind of wall to be built; but it is, perhaps, better to give the footing to the wall than to wait for the sufficient induration of the concrete to enable the wall to do without a footing; and better still, to lay the concrete of such height only, with reference to the spread or extent of base beyond the toes of the footing, that the gravel of which the concrete is made would stand at in an uncombined condition.*

Inasmuch, however, as some soils are liable to change in form, expanding and contracting under meteoric influences, as clays which swell when wetted and shrink when dried, concrete foundations are commonly interposed upon such soils to protect the building from derangement from this cause; or rather, to that effect walls are brought up from a level sufficiently below the ordinary surface of the ground of the cheaper material, concrete, instead of the more expensive brick or stone structure.

When concrete is used to obviate the yieldingness of the soil to pressure, expanse or extent of base is required to answer the end; and to this end the concrete, being widely spread, should be deep or thick as a layer, only with reference to its own power of transmitting to the ground the weight of the wall to be built upon it, without breaking across or being crushed. But when concrete is used as a substitute for a wall, in carrying a wall down to a low level, it is in fact a wall, wide only in proportion to its comparative weakness in the absence of manipulated bond in its construction, and encased by the soil within which it is placed.

Concrete, indeed, is at all times more safely to be regarded as a substance to be placed as a layer, than as a substance to be set up as a wall; for although excellent erections as walls may be made of concrete—as erections in the same form may be made of tempered clay—neither concrete nor tempered clay is to be regarded as a proper substance with which to form the lofty walls of buildings in towns."

EGYPTIAN DISCOVERIES.—Mr. John B. Greene, son of an American banker, while clearing away the palace of Medinet Habora, is said to have discovered the celebrated Egyptian calendar of which Champollion could only copy the first lines. Colossal figures have been brought to light, one of them showing the features of Rameses III. In clearing round this colossus, inscriptions of the grand portal between the two courts, and the existence of a pavement in granite, were revealed.

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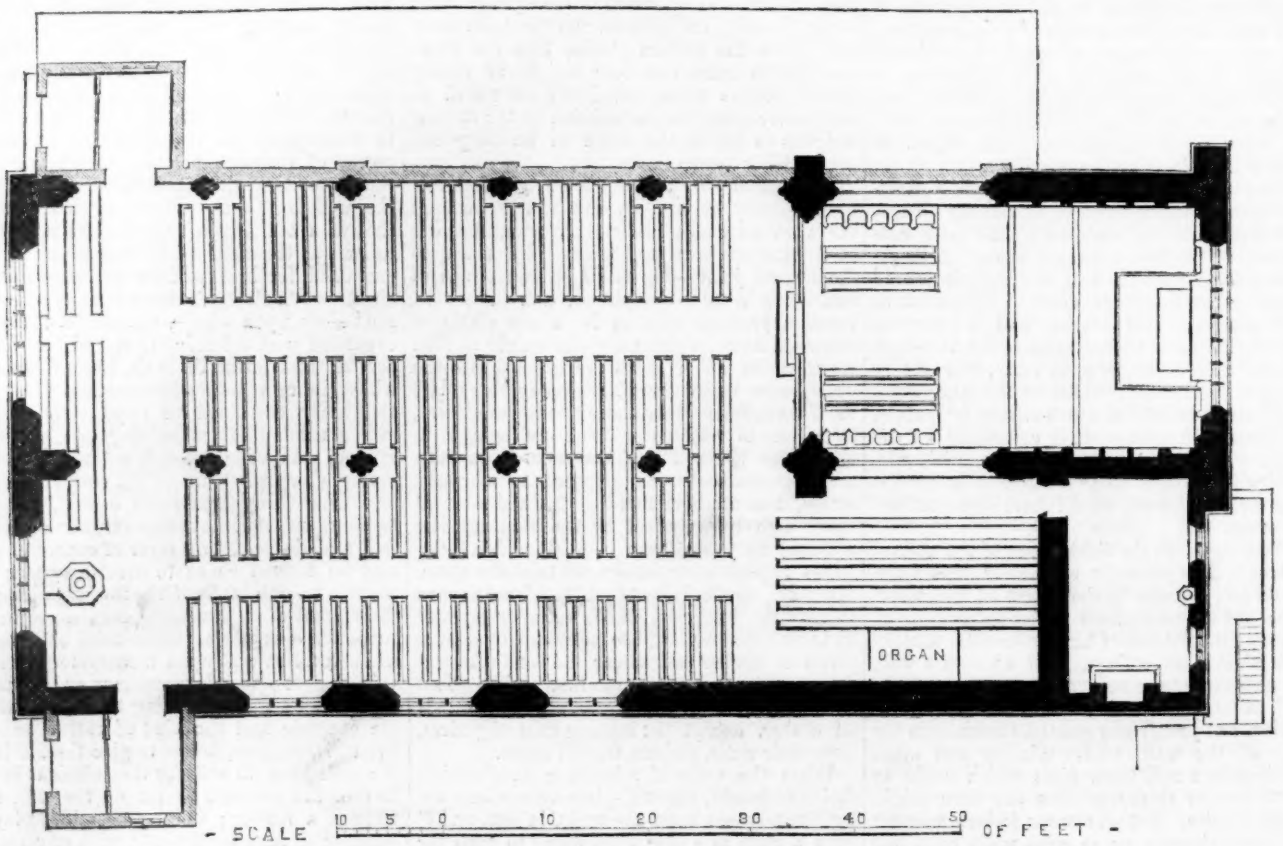
* A cog-hold is best obtained through the agency of a chair of cast iron, which should, however, be itself cogged or joggled to a stone template laid in the wall under it, and be capped or covered by another broad flat stone, as an inverted template, with a joggle from the chair running up into it.

* The author, being in Paris in 1846, measured the thickness in the ground-floor story of a newly-built coursed-rubble party-wall, in the Rue de la Banque (the Gresham-street of Paris), and found it to be exactly 18 English inches in that part, whilst the total height of the wall was not less than 85 feet. The wall ran up of that same thickness through six stories, a height of not less than 65 feet, and was terminated by a gable of from 12 to 15 feet high, of the same kind of structure; and there was besides a vaulted basement story, throughout which the wall might have been 20 inches thick, as other similar walls then in progress to neighbouring buildings proved to be.

* This is indeed the only safe practice in cases in which the full induration of concrete cannot be obtained before the wall or other structure to be raised upon it is begun to be built. Gravel poured dry upon the ground will resolve itself into a cone, having an angle of inclination to the horizon more or less acute, according to the sharpness, or otherwise, of the sand and stones of which it is composed.



PLAN OF CHURCH OF ST. MARY MAGDALEN, MUNSTER-SQUARE.

THE METROPOLITAN BUILDINGS BILL.

THE Metropolitan Buildings Bill is, at the last moment, the third reading, going through a series of proposed amendments, to be moved by Viscount Duncan. The exemption of "necessary repair" from the Act is to be qualified by the words, "not affecting the construction of any external or party wall." The rules of Schedule K of the present Act, with regard to rooms for habitation, are to be inserted after being made more stringent. Rules for projections are to be adopted from the present Act; nevertheless, eaves and soffits of overhanging roofs are to be of incombustible materials, and not to have the relaxation in their favour which was carried in committee of the whole House. Section 25 will be omitted with the last objectionable amendment in the committee of the whole House. The rule of the present Act respecting "back yards" is to be adopted, except that every house must (unless lighted and ventilated from the street) have 100 superficial feet of open space *exclusively* belonging thereto. We venture to think that this would be too stringent, especially in the case of shops on the ground-story, which may cover the whole of the owner's ground without injury to health. Those clauses of the present Act which have reference to noxious trades have been adopted in the Bill.

We believe an amendment will be proposed, allowing the district-surveyor's entry on premises for a month after discovery of works done, in cases where no notice of them had been given to him.

The Metropolitan Board of Works are to have the power of allowing thinner walls than are prescribed by the Act for the dwelling-house and warehouse classes.

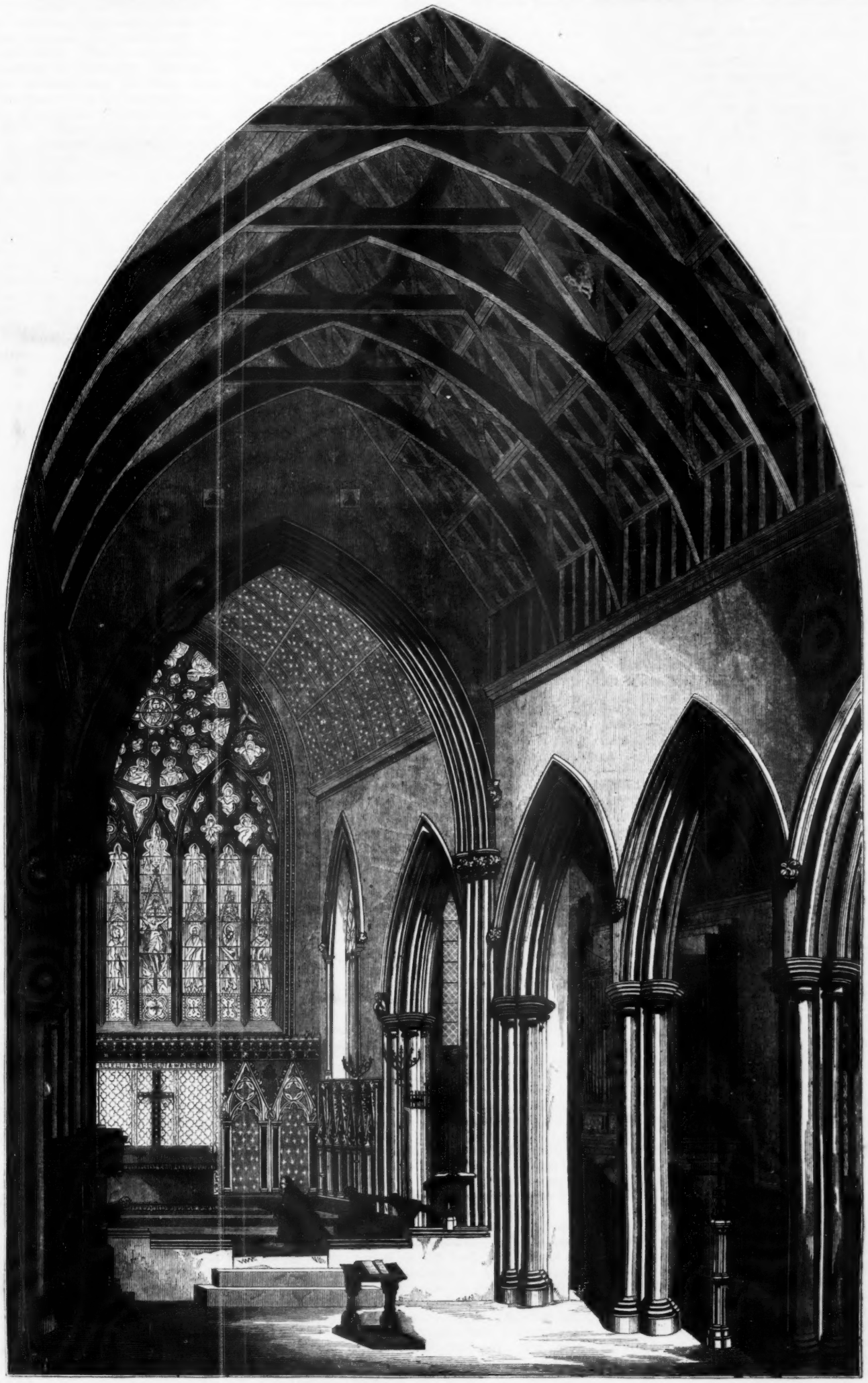
But the proposition which seems most objectionable, as well to architects as to the officers themselves, is a proposition to be brought forward that the schedule prescribing the thicknesses of walls of public buildings shall be struck out entirely, because of its manifest anomalies, and that the district surveyors shall have the determination of what is sufficient in all cases, not only respecting walls, but with regard to floors, roofs, galleries, staircases, and other parts of those buildings.

This proposition is so clearly at variance with the whole scope of the Bill, that we cannot think it will be adopted, for why should *specific* rules be framed to regulate minor matters, as is the case in all other parts of the Bill, and in this most important part, an unlimited discretion be given to the officers?

Would it not be better that the present rules for public buildings should be now passed, as they can be hereafter revised or recast by the Metropolitan Board of Works, under section 52?

ST. MARY MAGDALEN'S, MUNSTER-SQUARE, REGENT'S-PARK.

THIS church was erected from the designs of the late Mr. R. C. Carpenter, and under his superintendence. His works, as described in a memoir of his life, in the *Builder*, in April last, are extensively distributed in the provinces, but this is the only specimen of his skill possessed by the metropolis, and we have thought it desirable to give illustrations of it. The church of St. Mary Magdalen owes its foundation to the munificence of the present incumbent, the Rev. E. Stuart. It is designed to consist of a nave, with two aisles, and a large and lofty chancel. The tower, with a stone broach spire, will stand at the south-west angle of the church, in Osnaburgh-street, and the north side of the church will be open to Munster-square. The east end abuts on Laxton-street; so that ultimately three sides of the church will be exposed to view, and the situation, though in a thickly populated neighbourhood, is in this respect more favourable than can usually be obtained where space is so valuable. Our description necessarily speaks of the future, as the structure at present consists only of the chancel, nave, and south aisle, which were completed and opened for divine service in April, 1852. This site, when cleared of an extensive railway carriage factory and other buildings, was found to be so completely excavated to a depth of about 14 feet, that it was decided to carry up a substructure of brick piers and arches to the level of the street, due precaution being taken to prevent unequal settlements, and this has proved eminently successful. This done, the superstructure of Kentish rag, with Bath stone dressings, was placed upon it. The style is that of the fourteenth century. The nave and aisle have both gabled roofs, of Baltic fir timber, open to view inside, massive in their framing, and effective in appearance. The chancel roof is arched with timber, boarded and panelled. The east window of the chancel, which is of seven lights, is original in design, and is filled with stained glass, at a cost of 400*l.* by Hardman, of Birmingham, and is also interesting as being one of the last works upon which Pugin was engaged before his services were lost to the art. The lower part of the chancel is adorned by a series of richly carved arcades, with shafts of St. Ann's marble, and panels in the spandrils, filled with the same material. The whole of the arcades, as well as the chancel roof, are also highly enriched with colour and gilding, executed by Messrs. Crace, of Wigmore-street. The arcade on the south side of the chancel is varied, to form sedilia for the officiating clergymen, and the floor is raised three steps above that of the nave, and is separated from it by a stone septum. We shall give a view of the arcade hereafter. The west window of the nave is a fine one, of five lights, which it is intended to fill with stained glass, in memory of the architect. The position of the organ, which is raised on massive stone corbels projecting from the south wall of the aisle, at the east end, has been described by a musical authority as the best arrangement that has come under his notice. The performer is placed underneath the organ, on a level with the congregation, and faces the choir. The bellows are in a chamber beneath the floor of the church. The chancel is floored with Minton's encaustic tiles; the nave and aisles wholly with plain tiles from the same manufactory. The benches are of stained deal, and are moveable. Provision for kneeling is made by a strip of cocoa-nut matting laid between each bench, and a commendable attention to the wants of the congregation is shown in the provision of hymn-books for their use, which is fully rewarded by the heartiness with which they join the choir in the service. The cost of the church, as far as completed, has been about six thousand pounds. The contractors were Messrs. Kelk, of South-street, Grosvenor-square.



CHURCH OF ST. MARY MAGDALEN, MUNSTER-SQUARE, REGENT'S-PARK.——THE LATE MR. CARPENTER, ARCHITECT.

THE CRYSTAL PALACE.

A VERY beautiful model of the Coliseum at Rome, restored, has recently been placed in the Roman Court. This is an addition especially interesting to architects. The model exhibits great research, and has been executed with extraordinary care by Dr. Emil Braun, of Rome, assisted by Signor Francesco Pieroni, a Roman architect. The scale is one-eighth of an inch to a foot. Every opening is filled with its statue. The details are beautifully made out, and the posts for the *Velarium* are in their places at the top.

The plants are now in a beautiful condition, and the whole place full of charms.

The one drawback is the difficulty of access. The slowness of the trains, the pressure and inconvenience to which those who are coming away are subjected, and the difficulty to which those who go late are unnecessarily exposed, by being forced to fight their way through the outcoming multitude, are constantly brought before us. Surely some of these evils could be remedied.

PROVINCIAL NEWS.

Taunton.—The local *Courier* states that the foundation-stone of the new Assize-halls will be laid on 14th August.

Wolverhampton.—It is in contemplation to enlarge the Wolverhampton workhouse at a cost of 2,000*l.*

Birmingham.—An appeal on behalf of national schools about to be erected at Aston, has just been issued. These schools will be for 700 children, with suitable residences for master and mistress, and will be built in the immediate vicinity of the parish church. Plans have been prepared, a site purchased, and donations secured, amounting, with anticipated grants, to 1,500*l.* leaving 700*l.* still to be raised. The building is from designs by Mr. Empson, of this town, and will be chiefly in the Tudor style, some portions partaking of the character of the Decorated period, with a small tower and spire.

Weston.—The opening of the new dock at Weston Point, belonging to the trustees of the Weaver navigation, was formally opened on Thursday, in week before last. The works consist of a lock opening into the Mersey, 60 feet wide and 100 feet long, with a gateway 34 feet wide; and at the upper end another lock, through which the Weston canal to Northwich is entered. The basin and locks are constructed of Runcorn red stone, with two courses of Welsh limestone, placed at certain distances up the walls, to prevent the friction of vessels against the red stone. The whole of the work is set in "Halkin mountain" lime. The stone was supplied by Mr. J. L. Wright, from the Runcorn quarries; and Mr. Dean, of Northwich, was the contractor for the masonry. The works are from the designs of Mr. W. Saxon, resident engineer to the trustees. The whole was constructed under the superintendence of Mr. Donkin, clerk of the works.

Chorley.—The recently-erected baths at the alkaline and chalybeate springs of Whittle-le-Woods, Chorley, were opened on Wednesday before last. The baths, which have been erected at a cost of 1,000*l.* consist of a plunge bath for ladies, and one for gentlemen, the latter 81 feet long, 19 feet wide, and 5½ feet deep, and the former 16 feet long, 9 feet wide, and 3½ feet deep.

Guide (*Darwen*).—The chief stone of a new school was laid here on Saturday before last. The building is to accommodate 200 scholars, and to cost about 300*l.* of which 150*l.* is still unprovided. Mr. W. Thompson is to execute the mason-work, and Mr. William Hoghton, of Oswaldtwisle, the joiner work.

Edinburgh.—At a recent meeting of the City Paving Board, the chairman, Mr. Leburn, made a statement of various works which he said must shortly be carried out. In a report by the surveyor, estimates were given for these,—viz. for the laying of various streets in two ways, namely, in concrete and in sea sand. The total amount in concrete was 13,260*l.*; in sea sand, 11,370*l.*

Glasgow.—The narrow, inconvenient, and dangerous bridge over the Monkland Canal, at St. Rollox, says the local *Gazette*, is now removed, and workmen are busy with the preliminary operations for building an iron bridge, with a towing-path below. Meanwhile, the traffic is carried on over a temporary wooden bridge to the east of the road.

Montrose.—From an interim report laid before the Montrose Police Board, it appears that experiments are now in progress at the Haugh of Kinnaber, for ascertaining the capabilities of the Haugh for affording an additional supply of wholesome water for the town. According to the local *Review*, a well or tank has been constructed, 15 feet in diameter, and 15 feet in depth, through a fine sand and gravel soil, into which the water was flowing copiously, and from which it was being pumped by a water-wheel, at the rate of 288,000 gallons a day, and of excellent quality. Subsequently, the supply of water in the well at a few feet deeper had greatly increased, the yield being one-third more in quantity, the pumps continuously drawing day and night at the rate of 300 gallons a minute, or upwards of 430,000 gallons a day. This will give an additional supply for the town at the rate of 28⅓ gallons per head each day to the entire population, even though the yield be gradually lessened.

CHURCH-BUILDING NEWS.

Woodbridge.—There being a division amongst the Burial Board here as to the position of the intended chapels for the cemetery about to be formed, it was resolved that Mr. Cant, of Colchester, should be sent for, to look over and make a plan for laying out the grounds. This was accordingly done, and the plan was adopted, and directions given to have the specifications for both chapels prepared forthwith.

Handsworth.—The new church of St. Michael was to be consecrated on Monday last, by the Bishop of Lichfield. The church overlooks the celebrated Soho Works. It is cruciform in plan, consisting of chancel, nave, north and south aisles, transepts, clerestory, tower adjoining south aisle, and vestry. It is of the Decorated or Middle Pointed style, with a large admixture of Early English details. The chancel is separated from the nave by a moulded arch, resting on each side on a cluster of three cylindrical pillars, having foliated capitals. In the communion is a reredos of stone, and in the south wall sedilia containing three seats beneath a square-headed hood moulding, for the officiating clergy. The east window is of five lights, the head being filled with flowing tracery. Adjoining the chancel arch, on the north side, is placed the pulpit, resting on cylindrical shafts of black marble, each shaft having a foliated capital. It is octagonal, every compartment being ornamented with a tricusped ogee arch. The roofs are open. The tower is appropriated to the purpose of a baptistery, and contains a font, resting on a cluster of circular pillars. The seats, about 1,000 in number, are open and plain, 540 being free. Exteriorly the heads of the windows are filled with flowing tracery, approaching slightly to the Flamboyant style, and numerous buttresses terminate in pediments, with crockets and finials. A porch is attached to the south aisle; and on the south side, adjoining the chancel and transept, a small tower has been erected, surmounted by a dwarf octagonal spire, terminating in a finial. The tower adjoins the south aisle, is not yet completed, and has received a temporary roof at about the middle of the second stage. The expense of the erection of the structure is about 6,000*l.* the material employed being a light gray stone, with Bath stone dressings. The architect is Mr. W. Bourne, of Dudley, and the builder Mr. Jones.

Avon-Dasset.—A new Roman Catholic church here was opened on 4th inst. Mr. Myers was the architect. It consists of a nave, chancel, Lady Chapel on south of chancel, southern transept opening to Lady Chapel, and music gallery opening over the sacristry into the transept, whilst the sacristry itself connects the church with the presbytery. On the south-west rises a tower, surmounted with a spire, furnished with bell and clock. The lower portion of the tower forms a porch, by which the church is entered from the street. The altars are furnished with sculptured reredoses. The subjects carved in that of the high altar are the Nativity and the Flight into Egypt, whilst that of the Lady Chapel consists of enriched panels. Within a carved arch, surmounted by a floriated canopy of stone above the high altar, is a tabernacle of metal work, with chased and enamelled doors. A stone pulpit projects from the north side chancel arch, and is approached by stairs in the chancel wall. There are twelve stained windows, many of them gifts of friends of the founder. Mr. Hardman, of Birmingham, was the artist. In the centre lancet, over the high altar, is represented the Eternal Father, crowned, coped, and seated on a rainbow in a vesica, the atmosphere within which is of ruby seraphs, whilst angels hover over the rest of the lights. In the lancet on the right is the Virgin, in that on the left St. Joseph. On the northern wall of the chancel is a double lancet, in which are represented St. Peter and St. Paul, with their emblems. In the window near the pulpit is a historical representation of St. Charles Borromeo administering Communion to the plague-stricken people of Milan. The subjects which fill the two windows over the altar in the Lady Chapel, are the Annunciation and the Assumption; whilst the side window represents St. Stephen. There are three detached lancets at the west end. In the centre light is a representation of our Lord upon the cross: at the foot of the cross kneel St. Thomas of Canterbury on the one side, and St. Anne on the other. In the other two lancets are the Virgin and St. John in grief before their crucified Lord.

West Charlton.—The restoration of the parish church of West Charlton, which is intended as a memorial of the late Archdeacon Brymer, is now completed.

St. Asaph.—An obituary window is to be placed at the west end of St. Asaph Cathedral, in memory of the late Rev. Rowland Williams, of Ysceifiog. The work is to be entrusted to Mr. Gibbs, of London.

Rhyl.—The chapel belonging to the Calvinistic Methodists, which has been erected in Clwyd-street, Rhyl, was opened on 5th and 6th instant. It is in the Pointed style. Mr. Owen, of Llanrwst, was the architect, and Mr. Morris, builder, Rhyl, the contractor. The whole cost is about 1,800*l.*

Manchester.—The restoration of the clerestory, windows, &c. of the whole of the six south bays of the collegiate portion of the cathedral of this city, next the east end, is now completed. Where the collegiate portion of the church terminates, and the parish part commences, is indicated on the roof by an octagonal turret. On the west or parochial side of this turret, two bays have been completed, and two others are now in progress. It is thought that if adequate repairs be not made on the tower, there will, sooner or later, and perhaps sooner than is anticipated, be a downfall of a very dangerous kind. Instead of the soft and friable red sandstone of which the tower is built, all the restorations on the south side of the cathedral are being made with the stone from the Fletcher Bank quarries, Ramsbottom, near Bury; which is a peculiar kind of sandstone grit, very hard to work. Knowing how often a thick layer of plaster hides superior though older work below, those engaged in the restorations cut away a portion of the old plaster-cast restorations, and, at a depth of 4½ inches below their surface, found the Gothic mouldings of the earlier architecture. These have been their guides and models in the restorations. Inside, the south clerestory of the choir or collegiate part is being cleansed and washed.

Gainsborough.—The opening of the new church at Luddington took place on Tuesday before last.

Gateshead.—The restoration of St. Mary's Church is progressing. The stained windows, it is said, will be replaced, and the one intended for the chancel of the church is about to be entrusted to Mr. Wailes, of Newcastle, who is also designer of it. The principal figure is our Saviour, with Matthew and Mark on his right, and Luke and John on his left. In the larger circular openings of the tracery are represented the Baptism of the Messiah, the Lord's Supper, and the Resurrection; and in the smaller, the royal arms and the arms of the borough. Below the figure of Jesus, and above the record of the

sufferers by the explosion of 1854, there is introduced a representation of the falling tower of Siloam, with the words, "Think ye they were sinners above all men that dwelt in Jerusalem? I tell ye, nay; but, except ye repent, ye shall likewise perish."

DIFFUSION OF KNOWLEDGE OF ARCHITECTURE.

CONSIDERING the value and importance of architecture, we have often wondered that its great leading principles have not been made a subject of study in our schools, and a means of mental education. Some may not recognise the necessity or desirableness of such study: some doubt its practicability. It would be easy to show it is an acquirement affording largely that very sort of training and discipline which it is the business of schools to impart. The leading principles or laws of architecture may be laid down with all the precision which belongs to science. He who, after learning them, has no occasion to practise them, would still have acquired something which, if it did not avail him as a divine, as a lawyer, or as a physician, which ever he might be, would yet avail him as a man; and it would by no means hinder him from acquiring the specific knowledge of his profession. All practical sciences, as arithmetic, grammar, navigation, and the like, are thus taught. Rules are laid down and examples are subjoined; not that these examples are the cases, much less all the cases, which will actually occur; they only explain the principle of the rule, and are given as so many specimens of the method of applying it.

The whole art and science of war (as far as theory goes) is thus taught by Callander in his "Military Maxims,"—a collection of beautiful maxims; to illustrate which follow a variety of examples from battles and engagements, ancient and modern.

We would take this interesting book as a model for the popular teaching of architecture and its principles. The teacher might also consult to great advantage Professor Donaldson's "Maxims of Architecture, Theoretical and Practical;" Rickman's "Attempt to Discriminate the different Styles;" Durand's "Parallèle d'Architecture," and comparative views of celebrated edifices. Such works would form the public taste. Sums of money ought to be granted by Government for having them at all the free libraries and institutions throughout the country.

F. L.

THE NEW PARISH CHURCH OF ALDHAM, NEAR COLCHESTER.

THE new church of Aldham, near Colchester, was consecrated by the Bishop of Rochester on Friday, the 13th instant. The old church, in an inconvenient out-of-the-way part of the parish, was comparatively unknown, and to those who sought it out, presented a picturesque rural church with great brick buttresses of enormous strength shouldering up the old walls, round which the graves had risen as if to meet them half way in their expected fall; so that when you descended into the church, you were not surprised that the rude brick pavement was damp and the walls green. But it has all been pulled down, and the old materials removed to the present convenient position, where it has again arisen in its old form and dimensions, with the addition of a tower and stone spire. The old oak porch is well known to lovers of church architecture as a specimen of the work of the fourteenth century,* and here it is safe and sound.

The aisle is separated from the nave by an arcade of three stone arches and columns. In the old church a row of wooden posts occupied their position, and carried the junction of the nave and aisle roofs; but the foundations of the older columns were discovered, and a portion of one of the base mouldings (which, indeed, was re-used as the "first stone" of the present church) formed the key by which this arcade has been designed. A new stone chancel arch carried on corbels separates the nave from the chancel. The corbels are carved, and contain a figure of St. Peter in one, and St. Paul in the other. We do not understand that there was any vestige of a chancel arch in the old church. The east window is filled with stained glass, the centre light representing the Saviour: it is the work of Messrs. Ward, of London, who have also supplied one of the two-light windows on the north side representing the Crucifixion and Ascension. This is a memorial window to the parents of the present rector; while a portion of the east window is a memorial of Dr. Morant, one of the former rectors, and the well-known historian of the county.

The old roofs have been used throughout, with no attempt to hide their old stains and scars. The seats, which are all open, are of deal, stained and varnished; as also the pulpit, prayer-desk, lectern, and stall seats: on the latter are carved emblems of the four Evangelists.

The old ironwork has been preserved, and the abstracted rings restored to the doors.* There are also two bells of the fifteenth century, of most musical note. For the curious in such matters we add their inscriptions,—"Katerina vocata sum rosa pulsata mundi," on one; and "Margareta ora pro nobis," on the other one is 2 feet 9 inches, and the other, 2 feet 4 inches in diameter. The total length of the church, internally, from west to east, is 82 feet 6 inches; the width, including the aisle, 35 feet 9 inches; the internal height to the upper part of the roof, 35 feet; the height of the spire, including the weathercock, 96 feet.

The church accommodates 270 persons, and the cost has been about 1,600*l*.

The ground on which the church stands was given by Mr. Weston, and the spire was given by Mrs. Gee. Mr. Edward Hakewill was the architect; Mr. Luff, of Ipswich, the builder.

* See Brandon's "Analysis," plates 12 and 13.

ARCHITECTURAL AND ARCHÆOLOGICAL CONGRESSES.

The Liverpool Architectural Society have made their annual excursion, visiting Crewe Hall and Nantwich Church. A writer in the Liverpool *Daily Post* says:—"Crewe hall is a quadrangular building, built chiefly of red brick, with some lozenged-shaped ornamental work in black brick; the door frames, mullions, and cornices of cut stone; and the roof surmounted by a group of tall octagonal chimneys, of moulded brick, which add much to the effect of the general appearance. The hall stands in a well-planted park, of 552 acres; and beneath a new esplanade on the north side there is a magnificent sheet of water covering 95 acres. Each front of the building is broken by the projection of large bay windows. There are entrances on the east and south fronts, the latter of which opens on a staircase of singular curiosity and beauty.

The Chester Archæological Society selected for their annual excursion St. John's Church, Hawarden, Offa's Dyke, Hope Church, Caergwrle Castle, and Mold. A discussion took place as to the etymology of Caergwrle. The Rev. Mr. Massie and Mr. Ayrton contended for Pennant's definition, namely, "The Camp of the Giant Legion," and supported their arguments by the following derivatives,—*Caer*, a fortification, *gwr*, a man or a strong man, and *lle* or *le*, a place; while Mr. Hicklin read a letter from Mr. Williams, of Chester, assigning a different signification. The writer, sustaining his views, says,—"You will judge for yourselves when you ascend the hill, and see it covered in a remarkable manner with a plant which I do not know on dry ground anywhere else. It is the bog-myrtle, called in Welsh, *Gwrli*. My impression is, that, before the castle was built, the hill was *Bryn Gwrli*, and afterwards *Caer Gwrli*."

The Worcester Architectural Society have held a meeting at Warwick. Several papers were read; among them one by the Rev. W. Staunton, on "Church Architecture as a popular and interesting Pursuit; with some Remarks on the Church of St. Mary, Warwick;" another by the Rev. G. Ayliffe Poole, on "Photography and the Sketch-book;" and one by Mr. Parker, of Oxford, on "Kenilworth Castle." At the conclusion of the meeting visits were paid to St. Mary's Church, the Beauchamp Chapel, the Castle, Lord Leycester's Hospital, and All Saints' Church. There was a *conversazione* at the Court-house, when papers were read, and subjects of architectural and antiquarian interest discussed; and an excursion to Kenilworth, Temple Balsall, Knowle, and Solihull.

* See Analysis, plate 5, sec. 2.

Norfolk and Norwich Archæological Society.—The summer excursion of this society took place on Thursday and Friday before last, the churches of Marshland being the subjects of investigation. The meeting commenced under the presidency of Sir Wm. Ffolkes, Bart. at Wisbech Museum, where a paper on Wisbech Church was read by the Rev. W. B. Hopkins. After visiting this church, the company were conveyed to Walsoken Church (where a paper was read by Mr. Harrod, the secretary); to West Walton (paper by the Rev. E. Blencowe); by the Roman Sea Bank and the Marshland Tumuli to Walpole St. Peter's (paper by Rev. E. Blencowe), and Terrington (paper by Mr. Harrod); whence they proceeded to Lynn. On the following day, the churches of Tilney and Wiggenhall St. Mary's, Wallington Hall, and Stow and Wimbotsham Churches were visited.

SPONTANEOUS COMBUSTION.*

THE original form of a pamphlet on this subject now before us, was a paper read before the Literary and Philosophical Society of Liverpool, by Dr. Inman, who was lately a vice-president of that institution. The treatise is an important one, embodying a larger and more complete account of what is known of the circumstances and causes of spontaneous combustion than we have yet seen. It also contains an account of various experiments by the author himself, which tend still further to throw a light on this heretofore nascent and somewhat obscure subject. In testing the influence of different substances on painters' oil, for instance, in evolving heat and producing spontaneous combustion, he found that charcoal had the most powerful influence; and, indeed, of this fact painters are already aware, inasmuch as they know that lamp-black and their oil have at once to be ground, or they will ignite even in a few minutes. Next to charcoal stood sponge, then worsted, saw-dust, cotton-wool, tow, and shavings. The precise measure and time in which these various substances absorb oxygen when mixed with the oil are noted in a tabular form. We were rather surprised to find worsted, an animal substance which merely singes and does not tend, under ordinary circumstances, to burst into flame when fire is applied, ranking here next to charcoal and before cotton-wool; but our impression of the greater risk of spontaneous combustion from cotton than from animal wool is nevertheless borne out by these experiments; for Dr. Inman afterwards remarks, in reference to cotton, though not specially to animal wool, that in effect, and on account probably of the relative forms and surfaces, and access to air, of the different substances, "it is far more difficult to get small quantities of tow to ignite, even under very favourable circumstances, than cotton-wool: indeed, we may say that when the quantities used are small, it is difficult to procure actual ignition with anything but cotton-wool: when the quantity used is large, it is only a question of time." One point well worthy of notice, is the enormous amount of oxygen absorbed by painters' oil *in the first twelve hours*, compared with the ultimate quantity. This, the writer suggests, may explain how it is that fires so frequently break out within a *very brief* period after workmen have quitted premises where they may have been using painters' oil, and have left their greasy aprons, rags, or pieces of cotton on which their hands may have been wiped near to each other, *or to a warm steam pipe, or stove not yet cold* (or in a warm summer-day or sunshine, we might add); or that some few drops of oil have extended from the cans to some dust, sawdust, shavings, and the like. In such cases, we have the materials provided, and the train laid, as it were, for a conflagration which will burst out in an hour or two. Professor Graham refers to instances of olive oil igniting upon sawdust; of greasy rags from butter heaped together taking fire within twenty-four hours; of the spontaneous combustion of tape-measures, covered with oil var-

* "Spontaneous Combustion, and the Best Means of Extinguishing Fire. By T. Inman, M.D. London: Ward and Lock, Fleet-street. 1855.

nish; and even of an oilskin umbrella put aside in a damp state. The ignition of such materials, generally, it must be noted, is greatly favoured by a slight warmth, such as the heat of the sun.

Dr. Inman suggests, for the extinction of fires, in warehouses especially, and in ships, the previous arrangement of iron spouts, commencing outside in a convenient position, and running into the interior of each apartment or space likely to be exposed to the occurrence of fire, either spontaneously, or communicated by accident or otherwise. Through these spouts such gaseous substances as carbonic acid, or nitrogen as from the Fire Annihilator, might then, he remarks, be poured in without the necessity of opening doors, windows, or hatches, and of so admitting the air which inflames and increases the combustion. In certain cases, he adds, even the water-hose might be fitted on to the ends of such pipes, and deluge the burning materials.

The public are much indebted to Dr. Inman, and also to Mr. Papworth (whose tract we lately noticed), for the collection of the facts they have put together on the subject of spontaneous combustion.

COMPETITIONS.

Warwick.—Designs for a new corn-exchange, by Mr. Murray, have been selected.

Aberystwyth Clock Tower.—We continue to receive complaints that competitors have not been able to get back their drawings.

Peterborough New Church.—We are informed that forty-four designs were submitted to the committee for the proposed church at Peterborough, from which one by Mr. E. Ellis, of London, was selected.

Keynsham Schools.—A competition for proposed parochial schools at Keynsham, near Bristol, has been decided in favour of Mr. Masters. Various plans were sent in, out of which three were selected for builders to estimate from, viz. by Messrs. Gabriel and Hurst, Mr. Davis, of Bath, and Mr. Masters, and the ultimate selection was then made.

Kilkenny.—Mr. R. Burnham's plans for additions to the County Court House, Kilkenny, having been approved of in a competition for a premium of 22*l.* 10s. the grand jury proposed that the premium should be deducted from the per centage for superintendence, and furnishing working drawings, &c. As Mr. Burnham declined to accept the proposition, they decided on having no architect, leaving the building in the hands of the contractor and clerk of works! The architect declined to accept the proposition because he conceived he had already earned the 22*l.* 10s.

BUILDERS' BENEVOLENT INSTITUTION.

On Wednesday last the eighth annual general meeting of the friends and supporters of this excellent charity was held at the London Tavern, for the purpose of receiving the report, and upon other business. Mr. W. Lee, M.P. the president, took the chair.

Mr. A. G. Harris, the secretary, read the report, which congratulated the subscribers upon the success which continued to attend the institution. During the past year two elections had taken place, at which seven persons had been elected, making the total number at present enjoying the benefits of the charity, twenty-nine, viz. sixteen males and thirteen females. The amount paid in pensions since the institution was established was 1,979*l.* 13s. 4d. The annual ball, under the superintendence of the honorary secretary, Mr. Joseph Bird, realised to the funds the sum of 74*l.* 14s. 6d. The subscriptions and donations received in the past year amount to 1,225*l.* 9s. and 400*l.* stock had been added to the amount funded in the names of the trustees, viz. 200*l.* stock to the relief fund, and 200*l.* stock to the building fund, making the total amount invested in the Three per Cent. Consols, 4,750*l.*: 3,250*l.* stock to the relief fund, and 1,500*l.* to the building fund, with a balance at the bankers' of 338*l.* 2s. 11½d. The report, after calling upon the subscribers to place the means at the disposal of the directors to enable them to take in the unsuccessful candidates, concluded by stating that Mr. C. Lucas had consented to accept the presidentship for the year ensuing.

Mr. Joseph Bird having moved the adoption of the report,

Mr. George Bird, the treasurer, seconded the motion, and remarked that there never was a time when so many persons were in want of the benefits of this institution as at present. He was not aware whether they were all of the proper age to be admitted; but if they had subscribed more liberally in their prosperous days—and he called the attention of the meeting and the collectors particularly to that fact—the directors would have been enabled to place a larger number upon the list for election. In conclusion, he trusted that the builders generally would support their new president in large numbers at the next annual dinner in October next.

The motion was carried, as was also a vote of thanks to the trustees, moved by Mr. Cozens, who bore testimony to their valuable efforts on behalf of the charity.

Mr. Lee, M.P. in reply to a vote of thanks, said he regretted that his suggestion with regard to the amalgamation with the Tilers' and Bricklayers' Almshouses had not been adopted, but he trusted that it would yet be carried out. He should this year be master of the Tilers' and Bricklayers' Company, and if he could in that capacity serve them, he should be most happy to do so: in fact, they might reckon upon his co-operation in this good work at any time.

THE ARCHITECTURAL ASSOCIATION.

The Architectural Association Class of Design have elected Mr. Thomas M. Rickman their president for the ensuing session. Messrs. Thomas W. Horn and R. Druce continue as secretaries, and Messrs. R. Druce and A. MacGachen are the curators. The class is particularly recommended to the younger members of the profession as a source of wholesome emulation, their meetings combining pleasure with profit. An address will be read by the president at the opening meeting of the session 1855-56, which will be held at Lyon's-inn-hall, Strand, early in October.

HOUSE DRAINAGE ACT.

By this Act, the 18th Vict. cap. 30, the Metropolitan Commissioners of Sewers are authorized to exercise powers of house cleansing, drainage, and improvement, for the purpose of executing, in houses which may appear exposed to the ravages of zymotic diseases, palliative and preventive works, either temporary or permanent, to obviate the outbreak and spread of such epidemic disorders; and to carry on such works they are authorized to employ a sum not exceeding 25,000*l.* and to charge the cost of such works upon the owners or occupiers of the premises in which the works are executed. The commissioners having considered the provisions of the Act, a resolution was adopted that it should be carried into effect. The following resolution regulating the manner in which it should be carried out was then, after a lengthy discussion, adopted.

"That any money which the commissioners shall resolve to expend under the House Drainage Act, be laid out on those houses which are most exposed to the ravages of disease, preference being given to any such houses from which there appears the best prospect of being able to recover the amount expended, and chiefly for combined works. That in putting the Act into operation it is, in the opinion of this commission, inexpedient to empty cesspools during the hot months, except in cases of extreme emergency."

To make the first experiment, Giffin-street, and Regent-street, Deptford, were selected.

At the succeeding court, held on Tuesday in last week, the report of Mr. Donaldson, the district surveyor, was presented as to the expense, and it appeared that the average cost of each house being provided with a water-closet, cistern, pipes, and other accessories, was 12*l.* while the rent paid by the tenants was 5s. a week for each house. The commissioners, on considering the subject, found that they could not certify that, in the words of the Act, this was a "reasonable and proper" charge in reference to the rent of the premises where the works were to be executed, and the proposal for carrying the Act into operation in the locality in question was therefore negatived, and the Act thus far remains inoperative.

ACOUSTICS.

Your periodical, Vol. XII. page 342, contains a paper on Fountains Abbey, in which mention is made of some *jars* that have been discovered there, lying a little below the level of the floor, the use of which the writer of the paper is at a loss to conjecture. A paper read by Mr. Walbran, before the Yorkshire Architectural Society at Skipton, in Craven, also speaks of them; but the author confesses himself quite puzzled as to the purpose for which they were intended. Similar ones have been discovered at Norwich, and a communication respecting them has appeared in "Notes and Queries." Others, again, have been found in the church of St. Mary, Youghal, built into the wall, about 25 feet from the ground; and Mr. Fitzgerald, in a notice of them printed in the Proceedings of the Kilkenny Archæological Society for March last, gives a highly probable solution of the enigma, viz. that they were designed for *acoustic purposes*; and he quotes ancient examples to support his view.*

* This supposition was of course started when the jars were discovered at Fountains, but their position seemed to make it untenable.—Ed.

How far they might answer that end I dare not guess; but it has struck my unprofessional mind, that the shafts of Purbeck marble with which our cathedrals abound might be partly intended to serve the same purpose. Their sonorous properties are known to every one, and Paley ("Gothic Architecture," p. 97) says, "We have somewhere read of an arcade whose shafts were attuned in regular progression." That their colour and polish were intended to please the eye there can be no doubt; but this does not prevent their having been also meant to give resonance to the spacious buildings in which they are found. It is needless to observe that in the present day the acoustic qualities of churches, lecture-rooms, &c. often cause great disappointment, and if any thing could be done to facilitate the transmission of sound to the ear in our public edifices, without offence to the eye, it would be a great benefit to the community. This must be the apology for these suggestions to a learned body like the readers of the *Builder*, offered by

A Country Parson.

SURVEYORS' CHARGES.

Poland *v.* Tebbutt.—In this case, at the Bloomsbury County Court (before D. D. Heath, esq. Judge), Mr. Poland, the plaintiff, is a surveyor, of Margaret-street, Cavendish-square, and the defendant a tradesman in the same neighbourhood. The action was brought to recover 9*l.* 9s. as follows:—"Preliminary survey of house in Foley-place, as to the necessary repairs to be done, 1*l.* 1s.; drawing specification of repairs and fair copy, and superintending work of the value of 124*l.* at a commission of 5*l.* per cent. 6*l.* 4s.; settling up extra work and going through accounts, and finally settling same, 1*l.* 1s.; postage, 2s.; attendances upon Mr. Knight, &c. &c. as to an attempted encroachment upon the defendant's premises, 1*l.* 1s. Total, 9*l.* 9s." Of this sum the defendant paid 6*l.* 4s. into court.

Mr. Poland proved that in cases of repairs it was not usual to charge by commission, but by time. In this case he had taken into account the position of the defendant, and had charged by commission, and not time. He had no idea that the amount would be disputed, as he had sent in his bill upwards of a twelvemonth; and when he found there was a dispute, he had offered to refer the matter to Mr. Lockyer, a gentleman who had originally introduced him to the defendant.

Mr. Hunt, a surveyor, proved that the prices charged were fair and reasonable. He said,—"The plaintiff has made a mistake in this case, for he ought to have charged by time, as it is impossible in a case of repairs to do otherwise." Considered the time occupied in the preparation of the specification must have been three or four days.

The plaintiff's clerk, and a builder, were then called to prove that due diligence had been used in the superintendence of the work.

Mr. Williams (defendant's attorney) then submitted, that the plaintiff having made his election to charge by commission, and not by time, he could only recover commission; and, therefore, that the first, third, and fourth items, must come off. With regard to the last, he tendered evidence to show that the plaintiff never had been instructed to resist the encroachment.

His Honour, in giving judgment, said,—"I am quite clear that where a surveyor adopts one scale of charges, he cannot afterwards vary them. I am with the defendant upon that point."

The cause was then adjourned to enable the plaintiff to show that the third item was really for commission for extra work over and above the 124*l.*; and to produce evidence that he was fairly instructed to resist the encroachment.

His Honour said there was no doubt the plaintiff had not adopted the ordinary custom in such cases, but at the same time he was bound by his own election of the mode of charging.

TO MAKE RANCID OIL SWEET.

I have much pleasure in acquainting you with the results of my experiments upon *rancid oil*, in accordance with my promise to that effect.

The following substances will *prevent* oil from getting *rancid*:—

1. Sweet spirits of nitre. A few drops added to the oil. The effect is due to the *nitric acid* of the spirit, oxidizing everything but the oil itself. The *hydrogen* has *nothing* to do with it.

2. Creosote appears to answer even better than the last.

3. Methylic alcohol ("comm. wood-spirit"), if added in small quantity to oil, will prevent its putrefaction, probably from the creosote, &c. it contains.

4. Hypochlorite solutions. The hypochlorite of soda is about the best, but a little *strong* solution of chloride of lime does very well, shaken up with the

oil: when required for use, the oil may be decanted from the top, or drawn off with a syphon; or let the mixed *oil* and *solution* be poured upon a circular filter, *thoroughly wetted with water*, and placed in a funnel, when the *solution* will pass through the filter, the *oil* being left. (Any liquid which does not perfectly mix may be separated in this manner,—the filter-paper to be previously wetted with the fluid intended to pass through).

5. Small pieces of charcoal, soaked with diluted nitric acid, I have found to possess similar properties to the above.

Substances that will make rancid oil sweet:—

1. Sweet spirits of nitre.
2. Creosote (*very uncertain*,—cannot be depended on).
3. Methylic alcohol (*very uncertain*,—of little use).
4. Hypo-chlorites (*quite effectual* in a few hours; in a few minutes if boiled: the *dry salts* are of little use).
5. Peroxide of manganese (very good).
6. Animal charcoal (very good, but takes a few days, unless boiled with the oil).
7. Charcoal (of no use unless boiled with the oil: that from *beech-wood* is best).

WENTWORTH L. SCOTT.

Miscellanea.

ST. PAUL'S-ROAD, CAMDEN-TOWN. — Allow me, through the medium of your columns, to bring before the notice of the proper authorities, whomsoever they be, a nuisance which exists in the new "St. Paul's-road," Camden-town. At the termination of the yet incomplete thoroughfare of "brick-noggin" houses there being erected, immediately underneath the railway bridge which crosses the fields, is a hollow ground, into which all the surface-drainage must run; and when the rain falls in any quantity (as recently the case), an unfordable, offensive pool is formed, shutting out all communication on either side the bridge. Taking advantage of this circumstance, a benevolent individual has established himself "in position" with a plank, for the use of which he *moderately* levies black-mail, insulting those who do not avail themselves of the desideratum. The consequence is, that passengers are compelled to submit to this extortion, with the additional risk of being tumbled into these Stygian deeps, "for a lark," by the numerous hangers-on, or to go half a mile out of their way in order to reach St. Augustine-road, which is a few paces *in sight* of them. I cry, "A boat—a boat!" for the shipwrecked public.—RHEUMATICUS.

THE CONDITION OF THE THAMES.—The public attention still continues—and no wonder—to be seriously occupied with the condition of the river. The Lord Mayor has been using praiseworthy exertions to agitate this question, and numerous correspondents continue to address us on the subject. The state of the water supply in Southwark and at Vauxhall is very bad, and the Chelsea Waterworks continue to give a fluid full of decaying matter to their customers, instead of water fit for culinary or other household purposes. We hope shortly to be able to put together some facts which may help to bring this serious question to a speedy issue.

CITY COMMISSION OF SEWERS.—At a Court held on the 17th instant, a report from the Cemetery Committee was read, which stated that the ground would not be ready for consecration till the end of September next; that a contract for planting the cemetery, at a cost estimated by the surveyor of the committee at 1,800*l.* would require to be entered into; and that the surveyor had employed a person to lay out the ground, whom the committee recommended to superintend the planting, at a cost not to exceed 100*l.* including travelling expenses. The report was unanimously adopted. The commissioners afterwards considered the question of water supply to the poorer dwellings in the City, and the increased charges of the water companies, and ordered a copy of the medical officer's report on the subject to be sent to the New River Company.

FALL OF THE HUTHWAITE TUNNEL NEAR BARNSLEY.—On Saturday and Monday before last portions of the Huthwaite Tunnel, on the Manchester, Sheffield, and Lincolnshire Railway, fell in, completely obstructing the passage. By the praiseworthy exertions of some workmen, who were hoeing turnips on the Saturday, timely notice was given, and many a valuable life probably saved, as an express train came up shortly after the first fall took place. The strata above the tunnel are shale, but it is also thought that the masonry of the arch has not been sufficiently knit together.

ST. PETER'S, WALWORTH.—Tenders have been received for repairs, &c. at St. Peter's, ranging from 520*l.* to 199*l.*! Mr. Thornhill's tender at 284*l.* was accepted.

METROPOLITAN MILE-POSTS.—In reference to the recent article on this subject in our columns, a correspondent states that about four years back he had cast-iron plates (such as one sent us), stating the distance from the Post-office, in St. Martin's-le-Grand, fixed along the lines of the Commercial, East India Dock, West India Dock, Barking, and Essex roads, at each quarter of a mile, upon the house frontages, and on wooden posts in the country. He took the centre of the Post-office portico as his starting point, and chained the distances. The other turnpike trusts, however, could not be prevailed upon to go out of their old jog-trot, and the requisite improvement was not further carried out. Our correspondent also made a tender, at Sir R. Mayne's request, for the determination of the exact intersection of the Hackney Carriage Act circle with the leading radiating thoroughfares, and to mark it by distinctive cast-iron plates; but, through the Ordnance authorities and others, it was discovered that there were no funds applicable to such a purpose.

THE RANELAGH SEWER.—I take the liberty of asking your attention to the condition of an open sewer (known as the "Ranelagh sewer"), at back of Bloomfield-terrace, Pimlico, with the hope that you may be induced to remark upon it in your valuable paper. It is proposed by the Commissioners of Sewers to cover it in, but a stoppage in the works took place about six weeks back, since which time it has been allowed to remain, accumulating daily, and now having nearly 3 feet of soil, exhaling the most nauseous and dangerous vapours. I have several houses in the immediate neighbourhood, and, by the request of many of the inhabitants, have made application to the Commissioners of Sewers, who, *once only*, caused some lime to be thrown in. I have since written to Sir Richard Mayne, and received a reply from him that he has no power to interfere with the acts of the Sewers Commissioners. I have also applied to the Board of Health (believing in such a matter, where life was concerned, that I should get assistance). Their surveyor visited the place, and made his report, of which I received a copy; but, beyond pointing out that such a place and nuisance *did* exist, and was dangerous to the neighbourhood, no ultimate good was done.—JOHN NEWSON, JUN.

ELECTRO-TELEGRAPHIC PROGRESS.—A submarine telegraph from Turkey to Egypt is about to be formed. The Turkish government have granted an exclusive concession for such a telegraph to run from the Dardanelles to Alexandria. The cost will be 120,000*l.* Proposals are also on foot for extending the project to India, *vid* Suez and Aden to Kurachee, at the mouth of the Indus, where it would connect with the Indian lines. The total length from the Dardanelles to Kurachee is about 4,000 miles, and the sum required for the whole (including the line to Alexandria) would be 850,000*l.* The entire line to India may, it is estimated, be completed in two years.

SCENERY AT THE ITALIAN OPERA-HOUSE.—In the production of Meyerbeer's last opera, "L'Etoile du Nord," Mr. Gye has brought into operation all his resources, and with a result which makes it to be regretted that it did not occur earlier in the season. The composer and the musical artists, Mdlle. Bosio, Mdlle. Marai, Formes, Gardoni, and Lablache, have been justly praised by our contemporaries of the press, and we may confine ourselves to offering tribute to the scenic artist, Mr. Beverley, and the director of the stage business, Mr. Harris. The first scene represents a village near Wyborg, with carved wooden house at the side, and the Gulf of Finland behind. The water is capitally painted, but the scene being kept somewhat dark, with due reference to its geographical position, pleased less than it would have done if it had been less truthful. The Calmucks make a very picturesque group. The scene for the second act, where rocks rise above rocks, interspersed with trees, especially when the soldiers gather together, and the Tartars and the grenadiers of Smolensko descend the mountains, is singularly effective.

SALFORD MUSEUM AND LIBRARY.—The attendance of readers and the issues of books at the Royal Museum and Library in Peel's-park, Salford, during the fortnight ending July 14, have been as follow:—Libraries: volumes issued from reference library, 2,443; volumes issued from lending library, 1,855; total, 4,298. Reading-room: attendance of readers, 4,241. Museum: attendance of visitors, 27,200.

TO PREVENT COMBUSTIBILITY OF WOOD.—In reference to the dephlogistic composition, I am not aware of Mr. Braidwood's, but your correspondent will find a mixture of equal parts of *alum* and *borax* (biborate of soda) answer every purpose.—S.

DOWNING-STREET IMPROVEMENTS.—The cost of acquiring sites and erecting new public offices is estimated at 585,000*l.*

THE PUBLIC HEALTH BILL will be postponed.

THE DWELLING-HOUSES BILL FOR SCOTLAND has passed through the Commons.

SALE OF UXBRIDGE-HOUSE.—The Bank of England have purchased for their West-end branch establishment the mansion of the Marquis of Anglesea, in Burlington-gardens, Piccadilly, for 45,000*l.* or 47,000*l.*

CONSECRATION OF CHRIST CHURCH, BAYSWATER. Last week the Bishop of London consecrated the new church in Bayswater-road, near the new carriage entrance to Kensington-gardens. A view will be found at p. 31, *ante*.

THE IRON TRADE.—The quarterly meetings have exhibited no further improvement in the position of this trade; and as yet there exists no increase of demand to justify the resumption of those furnaces that have been put to a stand. The amount of business done has been unusually limited. The extreme discredit into which the Staffordshire ironmasters seem to have fallen from the late disasters and consequent disclosures, has created such a feeling of distrust, that the sellers of pig iron and ironstone have shown an unusual indifference about making sales, except such as were compelled by circumstances. Better prices have been realised for good qualities, but very few parcels, and those of small extent, have changed hands. The prices of iron may now be considered as settled for a time, and the variation from the nominal list is much more contracted than three months ago. Rods and bars may fairly be quoted from 7*l.* to 8*l.* per ton; hoops, sheets, and plates, from 8*l.* to 10*l.*; the highest price for pig iron being 5*l.* 5s. average qualities 4*l.* 15s. and hot blast cinder pigs 65s. per ton.—*Birmingham Gazette*.

THE FOUNTAIN OF DIANA, IN BUSHY-PARK, is being restored.

MELLISH'S PERFORATED VENTILATORS have an advantage over others, inasmuch as the perforations are made obliquely, so that a tendency upwards is given to the air as it enters, and direct currents are avoided.

TENDERS

For Warley Barracks, for the East-India Company. Quantities furnished:—

Lee	£16,240 0 0
Brass	15,952 0 0
Kelk	15,875 0 0
Lawrence	15,778 0 0
Wilson	15,587 0 0
Ashby	15,400 0 0
Holland	14,927 0 0
Lucas, Brothers	14,750 0 0
Nicholson and Sons	14,550 0 0

For brick and pipe sewers, 4,967 feet in length, under the control of the Metropolitan Commissioners of Sewers, at Tanner's-hill, Broadway, and New-cross-road, Deptford; Holmesdale, Hanover-street, and Cross-street, Lewisham. Engineer's estimate, 4,230*l.*:—

W. Hill	£3,920 0 0
J. and C. W. Carter	3,698 0 0
R. Goodison	3,500 0 0
Jos. Yeoman	3,451 0 0
Lee and Lavers (accepted)	3,350 0 0
W. H. Rowe	3,035 0 0

For residence for Mr. Jas. Insole, Llandaff. Messrs. Habershon, architects:—

Mitchemore, Cardiff	£2,972 0 0
James and Price, ditto	2,794 0 0
Rees, Llanelly	2,450 0 0
Harris, Cardiff	2,350 0 0
Rowland and Evans, London	1,992 0 0
Brown, Bristol	1,950 0 0

For a new aisle and putting new seats in the church at Seal, near Sevenoaks:—

Thompson, Maidstone	£1,350 0 0
Billson, Malling	1,320 0 0
Grover, Sevenoaks	1,172 0 0
Buckland, Loose, near Staplehurst	1,170 0 0
Constable, Penshurst	1,050 0 0
Wightwich, Malling (accepted)	884 0 0

For almshouses, Finsbury, for the Deacons of the Dutch Church. Mr. S. Dyball, architect. Quantities supplied by Mr. Poland:—

Rawlings, Brothers	£1,142 16 0
Macey	999 0 0
Haynes and Eyre	999 0 0
Lefevre and Son	998 12 7

For roads and drains at Highgate Cemetery:—

Batterbury	£1,926 0 0
Hill and Lads	1,770 0 0
T. D. Carter	1,731 0 0

For South Metropolitan Schools, Sutton, Surrey. Quantities supplied:—

	Wing.	Infirmary.	Total.
Maraland	£10,000 0 0	£3,420 0 0	£13,480 0 0
Thomson	9,973 0 0	3,384 0 0	13,357 0 0
Ashby and Sons	9,991 0 0	3,353 0 0	13,344 0 0
Lucas	9,780 0 0	3,220 0 0	13,000 0 0
Piper and Son	9,528 0 0	3,140 0 0	12,668 0 0
Mills	8,909 0 0	3,188 0 0	12,097 0 0
Pollock and Co.	8,990 0 0	2,972 0 0	11,962 0 0
Nicholson & Sons	8,710 0 0	2,940 0 0	11,650 0 0
Coleman	8,356 0 0	2,865 0 0	11,221 0 0